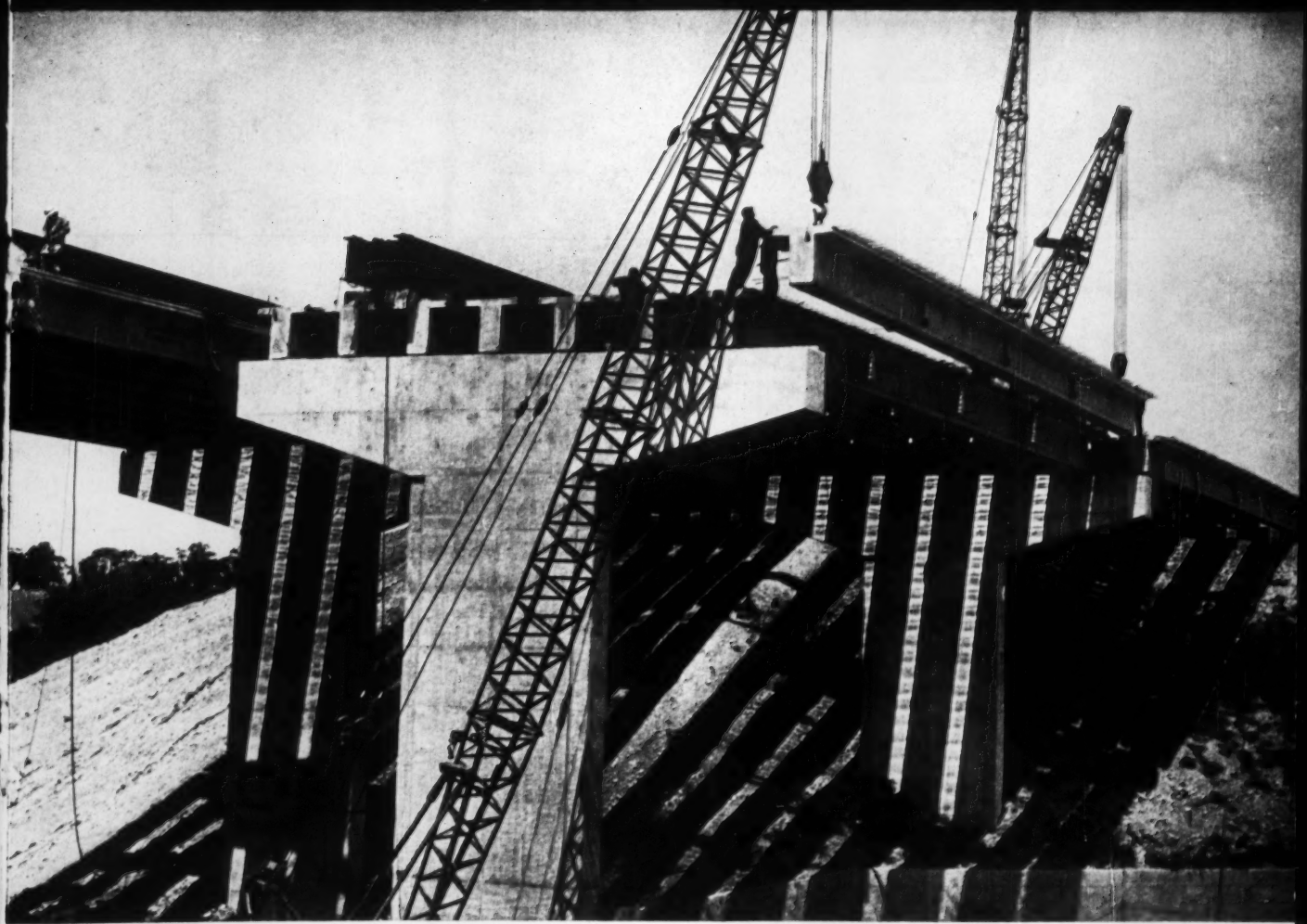
ENGINEERING NEWS-RECORD



Progress in prestressed bridges p. 36

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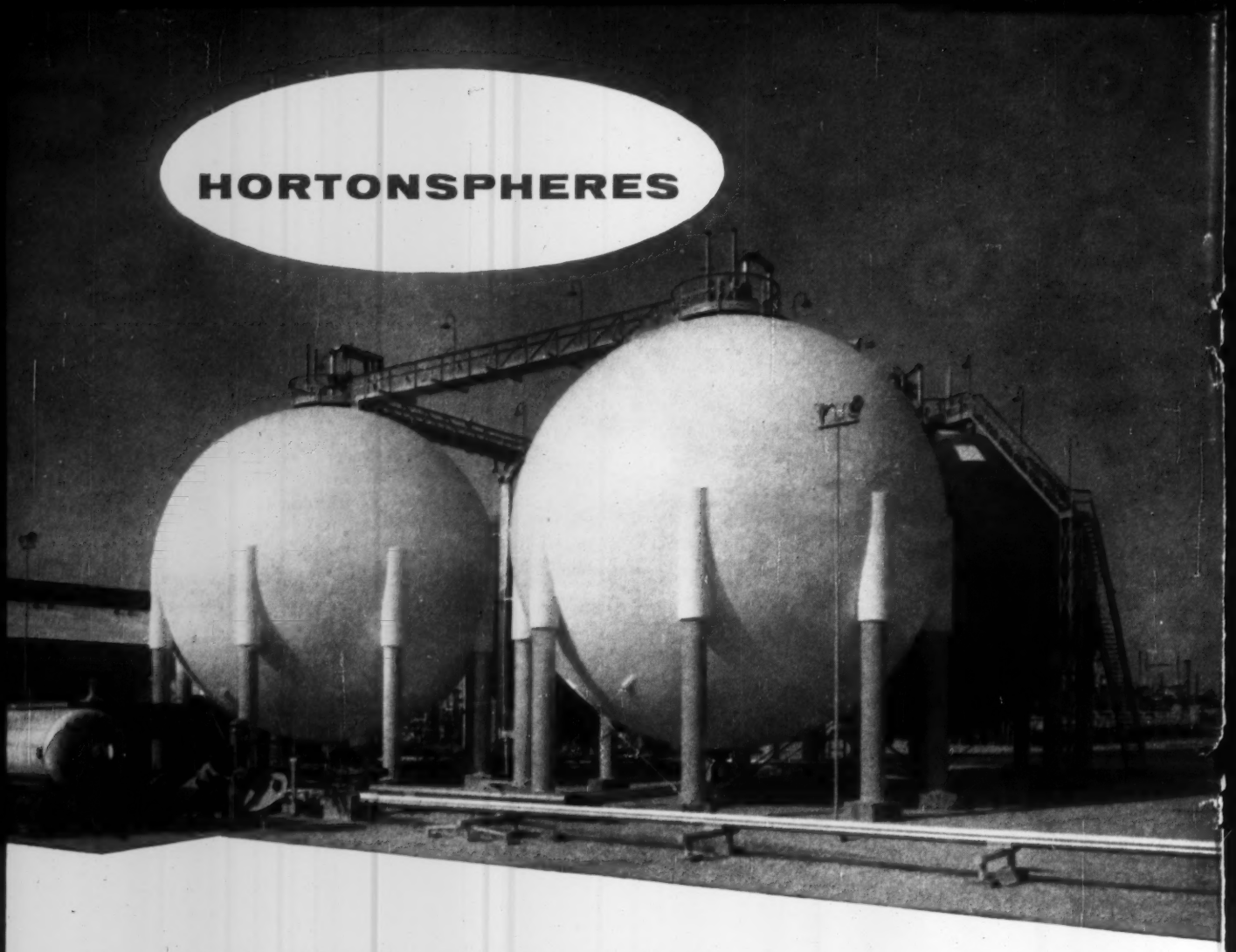

a symbol of progressive anhydrous ammonia plants

These 10,000-bbl. Hortonspheres®, located at the Phillips Chemical Company, Pasadena, Texas, are used to store anhydrous ammonia to take care of fluctuations in rates of shipping and to reserve ample supplies for use by the Phillips Petroleum Company.

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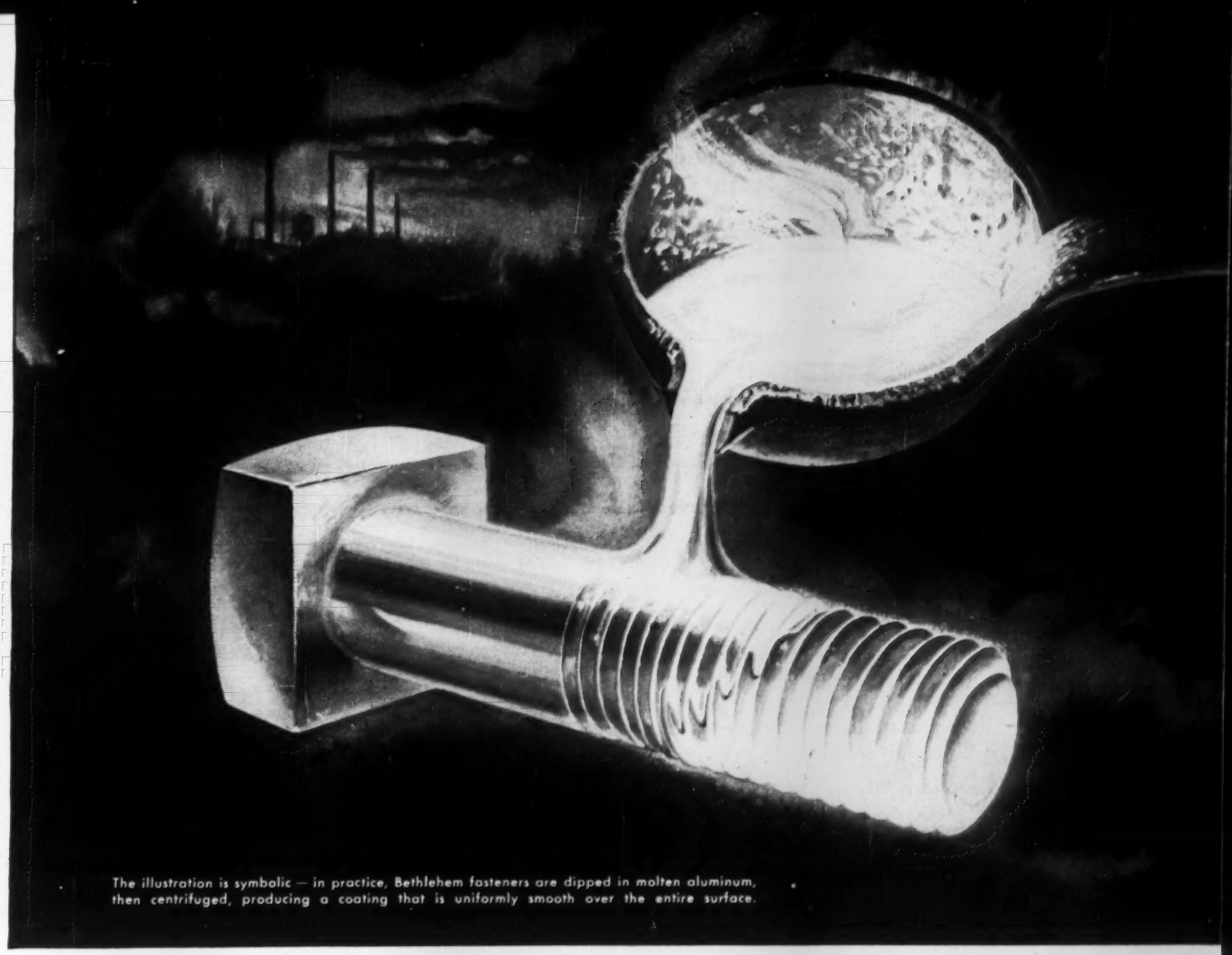


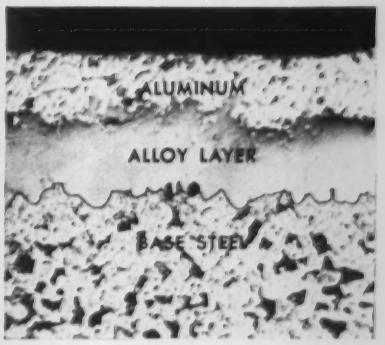
The illustration is symbolic — in practice, Bethlehem fasteners are dipped in molten aluminum, then centrifuged, producing a coating that is uniformly smooth over the entire surface.

Bethalume Coating for Fasteners is Superior in Corrosive Atmospheres

Looking for longer service life from steel fasteners exposed to corrosive conditions? Use fasteners which are protected by Bethlehem's Bethalume coating -- the hot-dip aluminum coating which, in equal thicknesses, outlasts zinc in most corrosive atmospheres.

With Bethlehem's new coating facilities, fasteners of virtually all types and sizes can be coated with a smooth layer of corrosion-resistant aluminum. Excess coating is removed quickly while in the molten state, leaving the coated threads clean and sharp.

If you would like to know more about the Bethalume coating for fasteners, and the long service life it makes possible in atmospheric and heat corrosion, just get in touch with the nearest Bethlehem office.



Section through Bethalume coating, showing aluminum overlay and iron-aluminum alloy layer.

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COMPANY SERVICE—Five concrete pipe plants and sales offices—the most recent in Ft. Lauderdale, Florida—assure prompt shipments to job sites, helping to keep your pipe work "on schedule." Take advantage of "United States" pipe quality and service on *your* next project. Write for more details.

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saves time

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Even more important, this new joint is as dependable as it is fast. A specially designed rubber gasket...only accessory needed ...fits into the bell of the receiving pipe. The inserted pipe slides in easily, compresses the gasket and makes a bottle-tight permanent joint.

No bell holes. No weather worries... "Tyton Joint" can be laid in a wet trench or rain. And so easily even a green crew becomes expert quickly.

For more speed, simplicity, dependability in pipe laying—all along the line—get the facts on "Tyton Joint." Call or write today.

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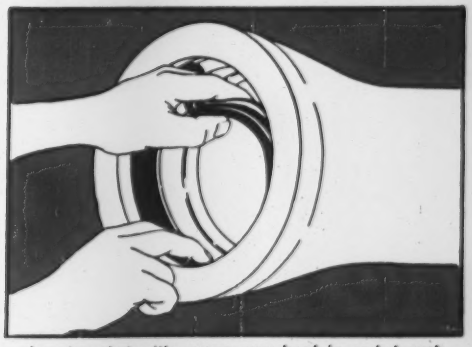
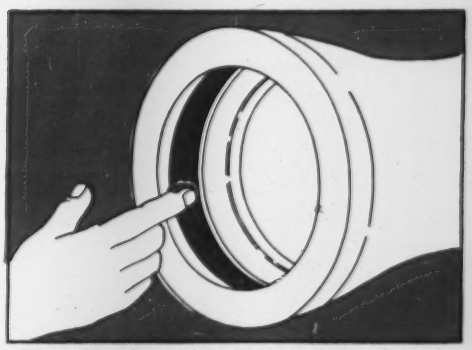
U. S. TYTON JOINT

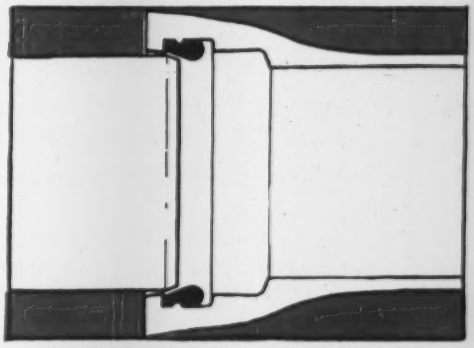
ONLY FOUR SIMPLE ACTIONS



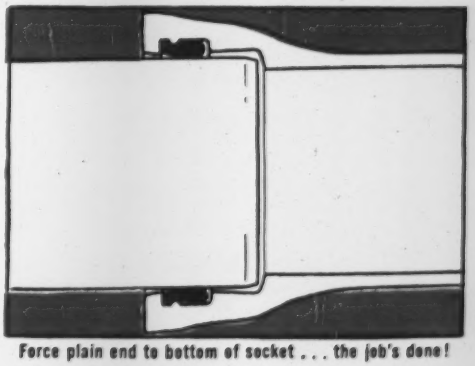
Insert gasket with groove over bead in gasket seat



Wipe a film of special lubricant over inside of gasket



Insert plain end of pipe until it contacts gasket

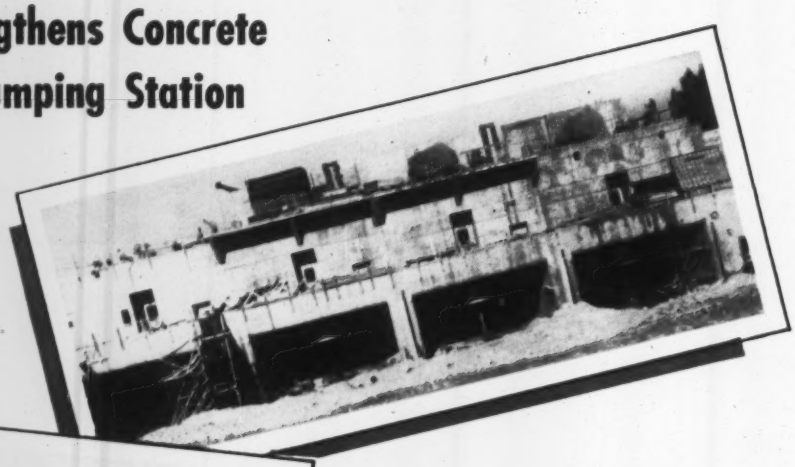


Force plain end to bottom of socket . . . the job's done!

DEWEY AND ALMY
DAREX Newscope

Entrained Air Strengthens Concrete In Flood Control Pumping Station

Over 10,000 cubic yards of concrete —air-entrained with DAREX AEA— were poured into intricate forms for this $1,222,000 pumping station at Lake Okeechobee, Florida. Vital part of a $300,000,000 flood control and water conservation project by U. S. Army Corps of Engineers, this station contains a solid mass of concrete 42 feet thick, except in steel intake flume and diffuser sections. DAREX AEA helped in placing mix, increases strength of pump impeller housing.

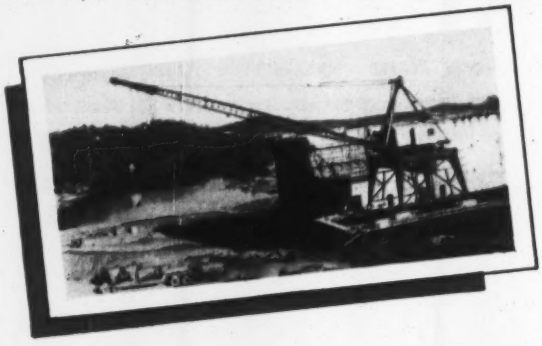


Florida Skyscraper Has Concrete Floors Made with DAREX AEA

Apt symbol of Prudential Insurance Company's "Strength of Gibraltar" is firm's 22-story office at Jacksonville, Florida. Steel framework of skyscraper, tallest in state, weighs 6,000 tons; DAREX AEA was mixed with concrete for 400,000 square feet of floor space. Contractor: Daniels Construction Co.; Architects: Kemp, Bunch & Jackson.

Air Entrainment Speeded Work on Arkansas Powerhouse

Shown under construction, powerhouse at Mt. Blakley Dam near Hot Springs, Arkansas, required 54,000 cubic yards of concrete, air-entrained with DAREX AEA. Now complete, dam controls floodwaters in Ouachita River valley, has two generators in $5,000,000 power station. Mass concrete and thin walls alike contain DAREX AEA for fast, economical placement. Contractor was Al Johnson Construction Co. Corps of Engineers, U. S. Army, planned and supervised project.



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DIVISION OF W. R. GRACE & CO.

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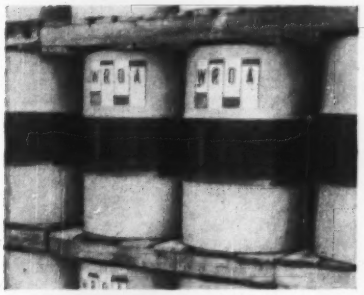
DAREX
Feature Product Extra

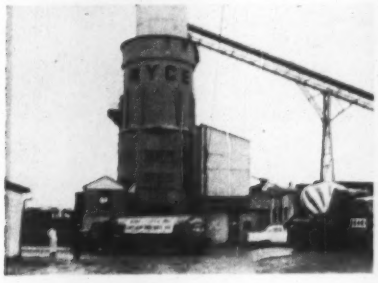
WRDA—First 3-way water reducing agent—Available in liquid form



WRDA available in liquid form ready for use

Delivered in rustproof 54-gallon drums, in tank trucks or in tank cars, liquid WRDA ends the complications and expense of dry powder mixes. Pre-mixed in the factory, with solids content rigidly controlled, WRDA eliminates the guesswork of job proportional mixing . . . and greatly reduces material handling and warehousing problems. Bag breakage and moisture pick-up are eliminated, labor costs are cut. WRDA can be efficiently dispensed by means of automatic equipment.

Begun in Philadelphia, a new tank truck system for metered delivery of WRDA to ready-mix plants is scheduled for use throughout the country. With this unique metered tank truck service, ready-mix plants are supplied with regular deliveries just as a householder automatically receives heating oil delivered to his home.



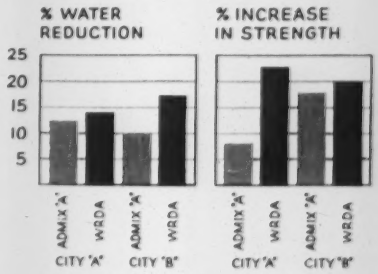
Permits 20% reduction in water content; increases compressive strength 30%; steps up cement hydration

Hailed as the first triple-purpose Water Reducing Agent ever offered the construction industry, Dewey and Almy's field-approved "WRDA" has received enthusiastic endorsement from engineers and contractors throughout the United States.

This remarkable chemical admixture disperses cement particles within the mix and, through an exclusive catalytic agent, speeds up their reaction with water. Its benefits are threefold: 1—water content can be reduced as much as 20%, yet the mix remains fluid and easy to pour; 2—compressive strength is increased up to 30%; 3—the over-all quality of the concrete is greatly improved.

The catalyst in WRDA speeds up the reaction between portland cement and water for higher *early* strength. Coupled with this, the admixture's dispersing action exposes more cement particles to hydration. Combined result is a fine-grained concrete which hardens with a compressive strength up to *1,000 pounds per square inch higher* than untreated concrete.

Proven in rigorous tests by impartial laboratories and in actual full-scale field trials at ready-mix plants, WRDA meets or exceeds accepted industry standards. Charted below are actual job test comparisons of competitive admixtures and WRDA.



WRDA is the culmination of Dewey and Almy research, backed by more than 25 years' experience in cement mills with TDA, another D&A catalyzing-dispersing agent. WRDA is unique in that it does not contain calcium chloride—nor does it delay finishing time.

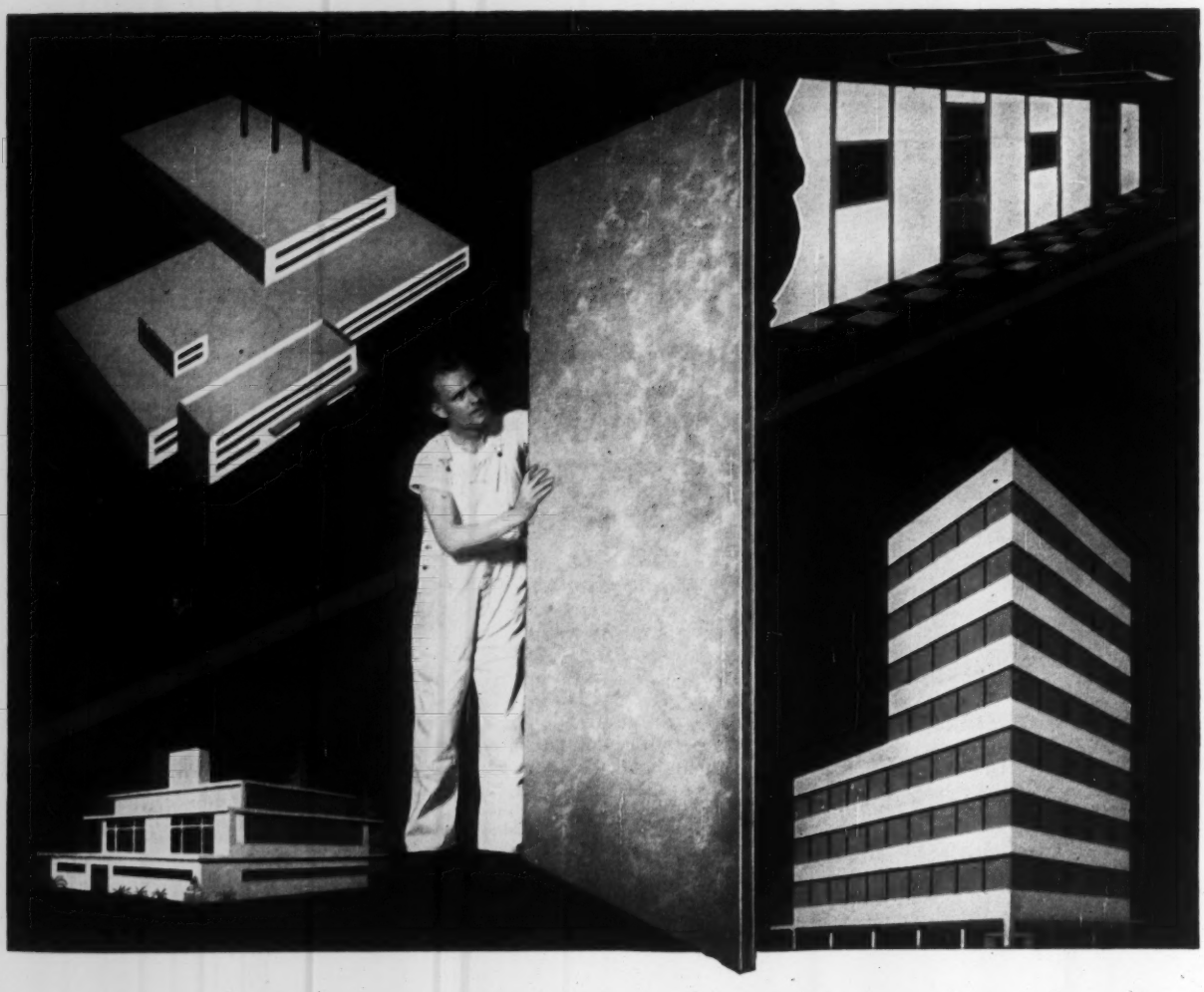
Ready-mix operators report important gains with the admixture: less tendency to "wet up" concrete, minimum strength variations, and—most important—the finished job meets the most demanding specifications.

Increases Strengths in Structural Lightweight Concrete

Used with Lelite lightweight concrete, WRDA and DARALITE (Dewey and Almy's lightweight air entraining agent), achieved amazing results in a mix designed for the construction of a Massachusetts high school. Water-cement ratio was reduced 20% by the addition of these two materials. Unit weights dropped—yet strengths were actually *increased* an average of 32.9%.

Ideal Admixture with DAREX AEA

Added separately to the concrete mix, another D&A product, DAREX AEA, entrains millions of tiny air bubbles to minimize particle interference among the sand grains in the mix. This air-entraining action, combined with WRDA's dispersing effect on individual cement particles, permits water reductions even greater than 20%. The two admixtures team up to produce a remarkably effective catalyst-dispersing and air-entraining action.



Panelized walls for buildings—large and small

Johns-Manville TRANSITOP® panels are strong, weatherproof, save time and money

ARCHITECTS AND ENGINEERS are finding Transitop the ideal material for panel curtain walls in the design and construction of modern buildings. Exterior and interior walls erected with Transitop panels have great structural strength. They are quick and easy to install.

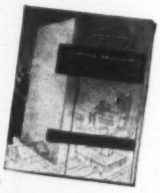
J-M Transitop panels have a highly effective insulating core impregnated to resist moisture and laminated for strength. This core is faced on both sides with strong, tough Asbestos Flexboard®. The insulating core and Asbestos Flexboard are bonded together with waterproof adhesive.

A Transitop 1 9/16-inch thick curtain wall has the equivalent insulation value of a 24-inch thick brick or masonry wall.

Because Transitop panels weigh only 4.7 lbs. per square foot, they reduce the dead load factor. This permits lighter framing and less expensive foundations. This means savings in labor and construction time. In fact, Transitop panels often pay their own costs as a result of the savings they make in total costs of the building.

Transitop panels have excellent wind load resistance, high moisture resistance and they provide maximum insulation value. Also, the Asbestos Flexboard facings are classed as incombustible by the Underwriters' Laboratories.

J-M Transitop is available in panels 4' wide by 8', 9', 10' or 12' long; and 11/16", 1 1/8", 1 9/16" or 2" thick.



Send for free copy of "J-M Asbestos Transitop." Write: Johns-Manville, Box 111, New York 16, N. Y. In Canada, write: 565 Lakeshore Road East, Port Credit, Ontario.

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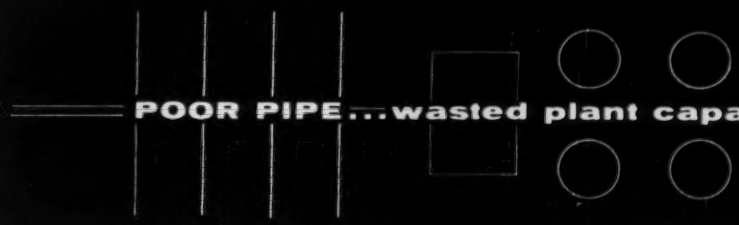
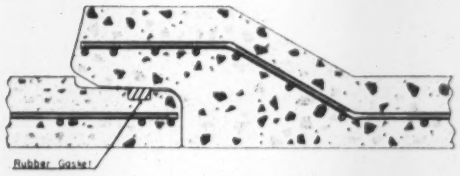
SEWAGE DISPOSAL PROBLEM...



POOR PIPE...wasted plant capacity = LOST DOLLARS

A SOLUTION:

from CEN-VI-RO...producers of the world's finest concrete pipe!



THIS Rubber Gasket Joint Assembly is used in the manufacture of Cen-Vi-Ro Reinforced Concrete Pipe of conventional design and for Cen-Vi-Ro Reinforced Concrete Pressure Pipe. When the pipe sections are drawn together in the trenches, the round rubber "O" ring-type gasket is uniformly compressed around the periphery of every joint to provide a water-tight seal. There is no exposed steel in the joint assembly. The flexible joint allows for expansion, contraction, settlement and lateral displacement of the finished pipe lines.

IT IS KNOWN THAT—

It costs just as much to process one gallon of infiltrating water as one gallon of sewage!

IT IS KNOWN THAT—

Collecting lines of porous pipe and leaking joints permit INFILTRATION—often equal to the amount of sewage to be processed.

IT IS KNOWN THAT—

INFILTRATION requires larger collecting lines and increased plant capacity.

CEN-VI-RO BELL AND SPIGOT PIPE SOLVES THE PROBLEM:

CEN-VI-RO concrete pipe with bell and spigot joints, and "O" ring-type gaskets, KEEPS GROUND WATER OUT—KEEPS SEWAGE IN!

Prevents INFILTRATION, allows smaller collecting lines, lowers installation costs and permits smaller plant capacity.

CEN-VI-RO

PRODUCERS OF THE WORLD'S FINEST CONCRETE PIPE

CEN-VI-RO PIPE CORPORATION

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BRIGHT COLORS
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And get greater hardness at low cost . . . easily!

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Ready to use . . .
No pre-mixing with cement

Not a paint . . . ART-ROC troweled into the cement surface holds attractive colors safe from attack by cleansers, alkalis or rust. Provides a tough extra-hard surface at no extra cost . . . both for interior and exterior installations. Floors or pavements with ART-ROC are bright and attractive . . . easy to clean, economical to keep up.

Colors . . . Hardens . . . Beautifies . . . Dustproofs!

Just sprinkle on the leveled and floated fresh concrete surface, then work into the surface with a wood float and finish with a steel trowel. You'll be amazed at the brilliance and depth of the two beautiful colors: Tile Red and Spanish Green.

Remember . . . ART-ROC is not just a surface film, but color that's built-in to stay . . and it's so easy to use!

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Reader Comment

Salary Article Questioned

SIR—I was pleased to read Arthur Richard's article in ENR June 6, p. 46, showing how well off engineers in governmental agencies happen to be at this time.

In the same issue of ENGINEERING NEWS-RECORD, it was noted that the 20 city average wage rate for common labor was $2.29 and for skilled labor was $3.51, which indicated that a relatively small percentage of the total number of engineers in groups A, B, and C of the article were, in fact, earning more than the skilled workers on their various jobs. The point that basic salaries, regardless of percentage increases and comparisons with the cost of living index, are not high enough, was missing.

The facts of life from one point of view in the federal service are that we cannot attract sufficient engineering college graduates at starting salaries of $4,480 and cannot retain them when, after a number of years of important engineering work, they may be making as much as $7,035. To promote the idea that governmental salaries, federal, state or local are now satisfactory is subject to question.

To attract a fair percentage of the best brains in the graduating classes, we must show them that the minimum economic rewards including all incentive programs, such as paid graduate education, are worth their efforts in pursuing engineering. Otherwise, their efforts are in vain and their numbers will steadily diminish.

As John Ruskin once said "The common law of business balance prohibits paying a little and getting a lot . . . It can't be done. If you deal with the lowest bidder, it is well to add something for the risk you run. And if you do that, you will have enough to pay for something better."

It appears to me that it is in the best interest of the community and the nation to establish higher local, state and federal governmental engineer salary scales to attract high quality personnel and thereby insure the best engineered product which in the long run is the cheapest.

WILLIAM H. MITCHELL
Boston Naval Shipyard
Boston, Massachusetts

●

SIR—In Mr. Arthur Richards' recent article, "How Engineers' Salaries Have Changed—and Why" (ENR June 6, p. 46), there are undoubtedly true statements made regarding the economic gains made by the civil engineer. However, they do not in my estimation cover enough territory or present a true picture.

Engineers may appear to be relatively well off compared to depression years when salaries were at rock bottom. But why compare engineers among themselves when the true comparison should be engineers' salaries to the cost of living? Since 1956 was considered to be a prosperous or boom year, wouldn't a clearer picture be made by comparing the gains made to that of another boom year such as 1926?

Let us meet Mr. Richards on his own terms, however, and use his charts and comparisons. Take the young engineer on chart C who has made the greatest gain. He has invested approximately $2,000 per year for at least four years of academic training and at the same time sacrificed four years of earning power. He has worked two more years as an engineer in training for a modest salary and, say, has four years experience as a junior engineer. His salary of $8,000 (this is the top figure used on the chart) would run about $3.50 per hour for a 40 hour week. Just about any union plumber, bricklayer or ironworker can duplicate these wages.

True, the civil engineer has made advances in salary, but they are not in proportion to the responsibilities or training and are below the dignity of his professional status if he makes no more than a bricklayer or plumber.

There are certain social standards brought to bear on a professional man. He has a better than just good education and is expected to have a better than just good automobile, live in a better than just good neighborhood, wear better than just good clothes to the office and do a reasonable amount of entertaining in the line of duty. In return he has a right to expect a better than just good salary.

No such demands are made on the tradesman. Yet, the hourly wage for the bricklayer (base rate) in our area is $3.70 for a 40 hour week. He receives time and a half for overtime.

(*Continued on page 14*)

Engineering News-Record welcomes expression of opinion from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance.

Letters should be addressed: Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

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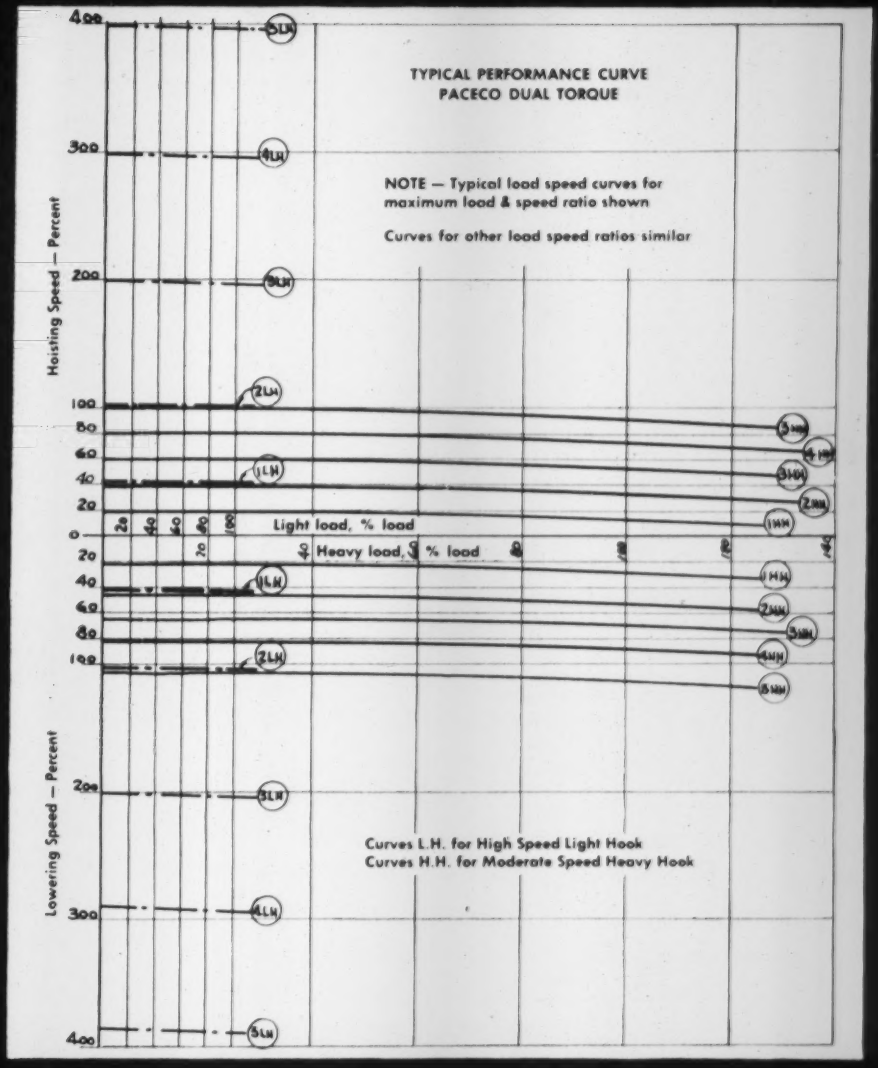
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Curves for other load speed ratios similar
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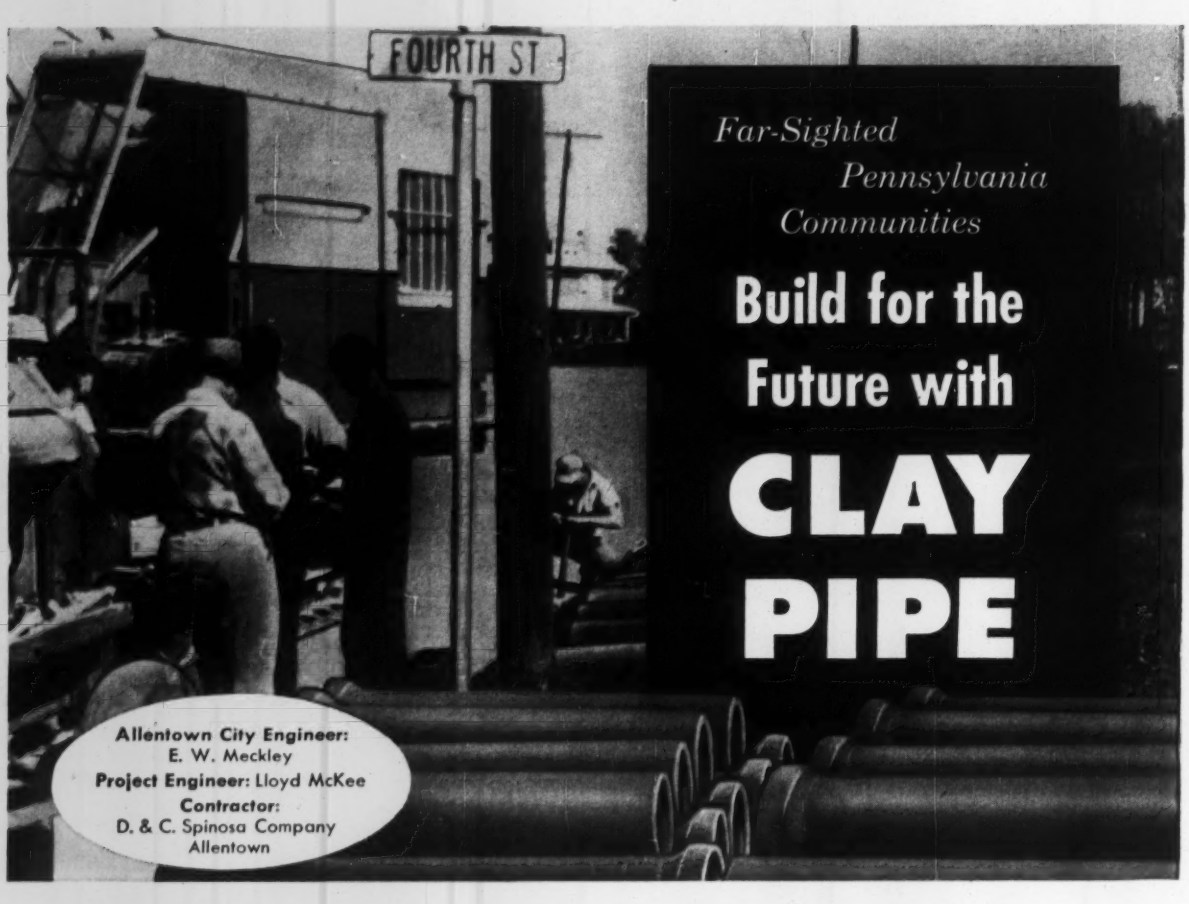

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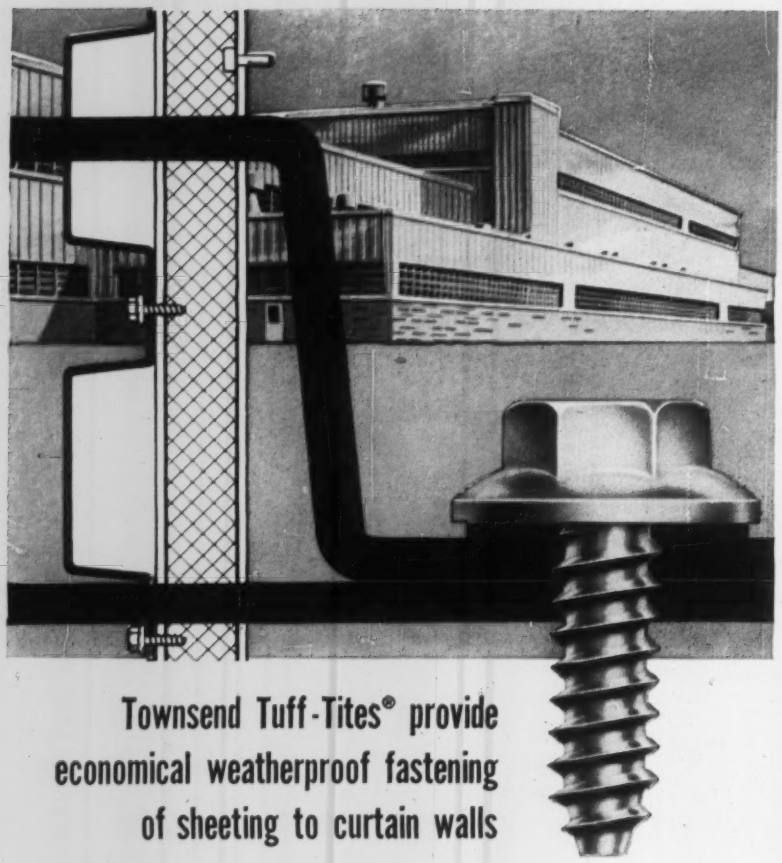

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. . . Reader Comment

Now, let us look at Chart D. In 1930 the median wage was $2,000, and in 1956 it rose to $5,500. This is well below union wages, and according to Mr. Richards, this group is composed of 70% of the total engineers employed by the highway departments. Look at Chart A. The lower figure of $7,500 per year for a chief engineer is a ridiculous figure even to appear on the chart when you consider the responsibility he carries and the number of years of experience he has accumulated. Even if he were making the top figure of, say, $18,000 as chief engineer for the highway department of any state, he would be directly responsible for millions of dollars worth of construction and maintenance of roads, bridges, etc. So whether they be the small Spanish variety or the big Jumbo variety, the fact remains that civil engineers are still being paid peanuts!

Gains have been made, but they are hardly adequate. Most engineers are hired for the minimum salary for which they will agree to work. True, no professional engineering society has ever doubted that the engineer himself is the best master of his own economic destiny, but should engineers not hang together, they will undoubtedly hang separately. Until more attractive salaries are offered engineers in all categories, the trades will become more attractive and the engineer shortage will continue.

Engineers themselves place too low a value on their works and on their associates. Perhaps if engineering societies placed more emphasis on stimulating public service, and encouraging and developing the efficiency of the engineer, the economic and professional status of the engineer would be automatically increased.

Admittedly, it is easier to criticize than to do something about it, but this is a warning about being complacent and uninterested in your own profession.

MRS. JOHN C. GIBSON
"Wife of an underpaid engineer"
Dallas, Tex.

CALENDAR

World Conference on Prestressed Concrete, Fairmont Hotel, San Francisco, Calif., July 29-August 2.

Hydraulics Div., American Society of Civil Engineers, Kresge Auditorium, Massachusetts Institute of Technology, Cambridge, Mass., Aug. 26-28.

New England Water Works Association, 75th Annual Convention, Hotel Statler, Boston, Mass., Sept. 15-18.

Computer Conference, sponsored by U. S. Bureau of Public Roads, Hotel Somerset, Boston, Mass., Sept. 17-19.

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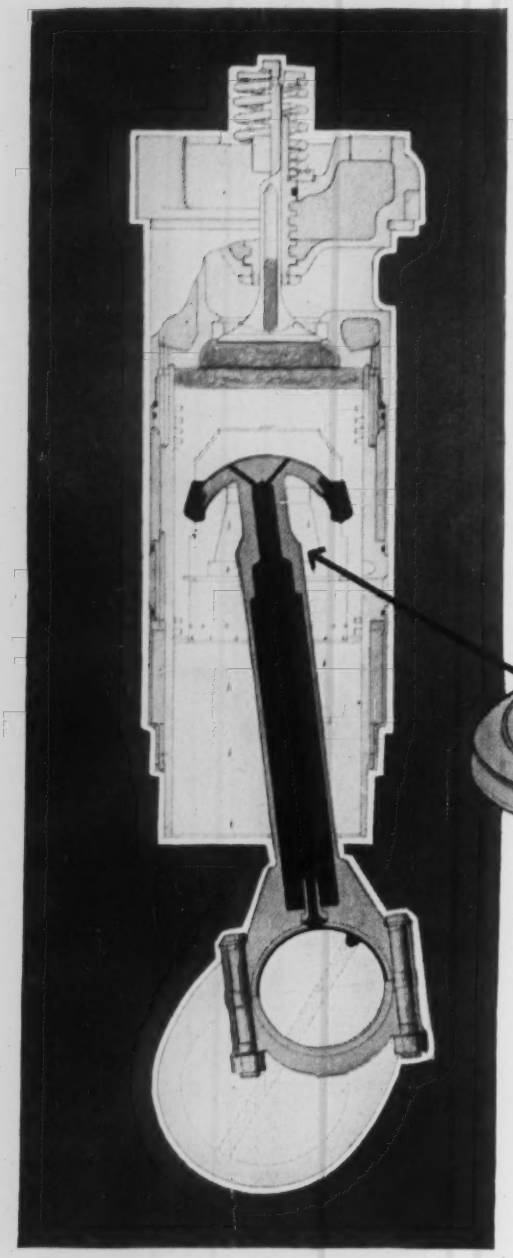

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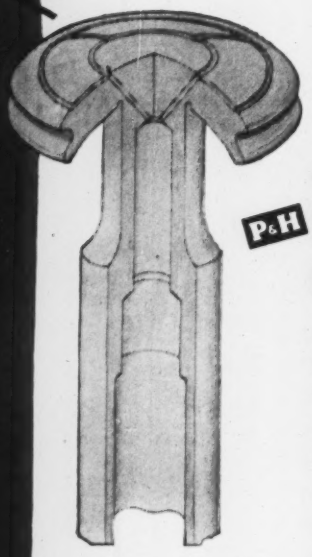

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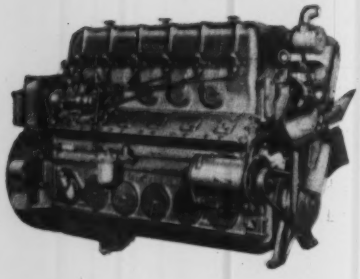

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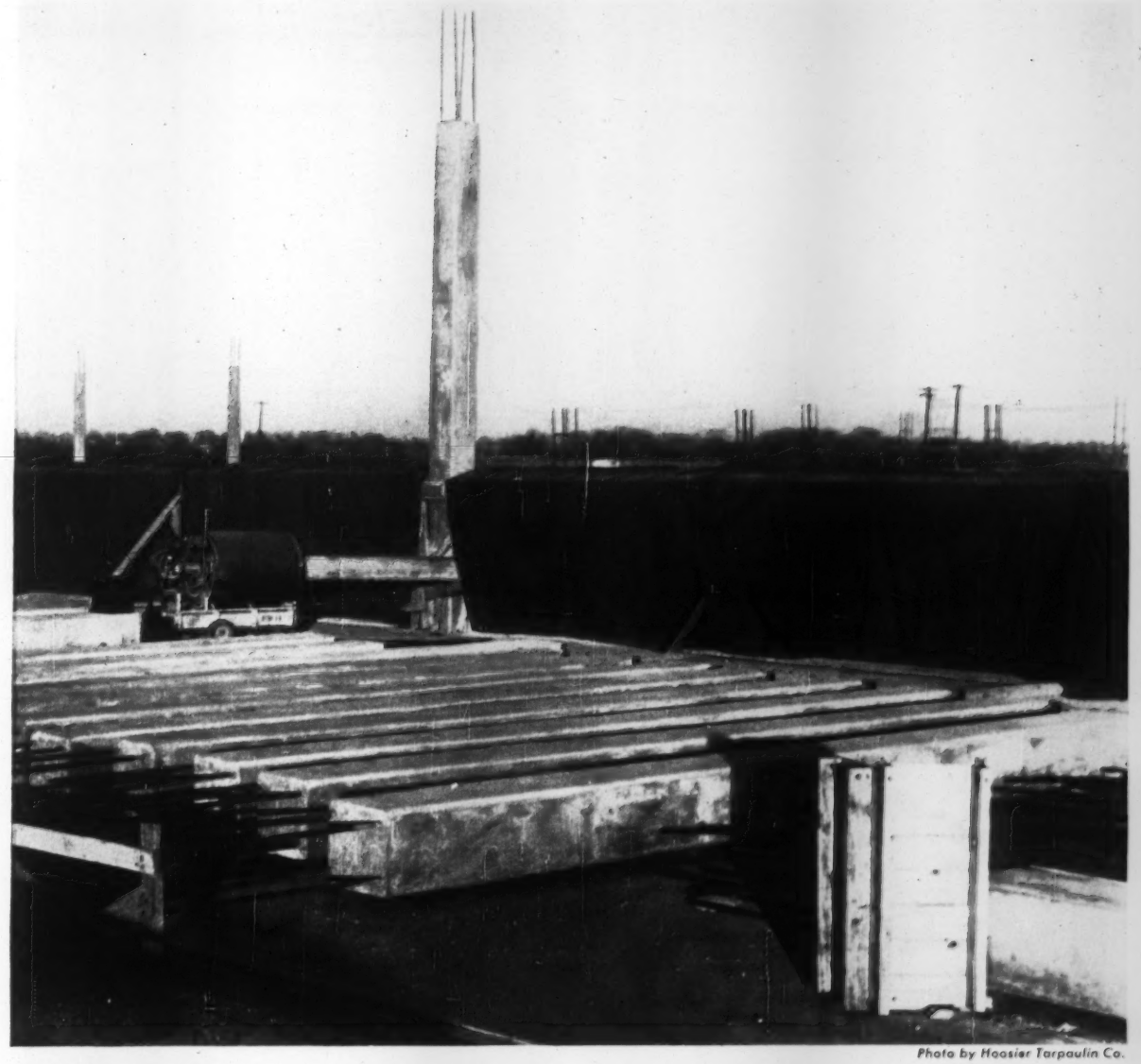

Photo by Hoosier Tarpaulin Co.

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ENGINEERING NEWS-RECORD

Vol. 159, No. 3 July 18, 1957

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THE CONSTRUCTION WEEK

PREFAB BUSINESS PICKS UP—A manufacturer of prefab buildings, both standard and special design, writes, "We have seen a remarkable upturn in our business in the past three weeks, a distinct contrast to the softness in the commercial and manufacturing building field noted for most of 1957 so far. Of course, we hope these conditions continue since we still have a number of very large projects still held in abeyance."

WHO'S ON FIRST?—A debate seems to be getting started in Arkansas, with the governor and State Police Commission (and manufacturers) on one side; the state attorney general, and a Police Commission official on the other.

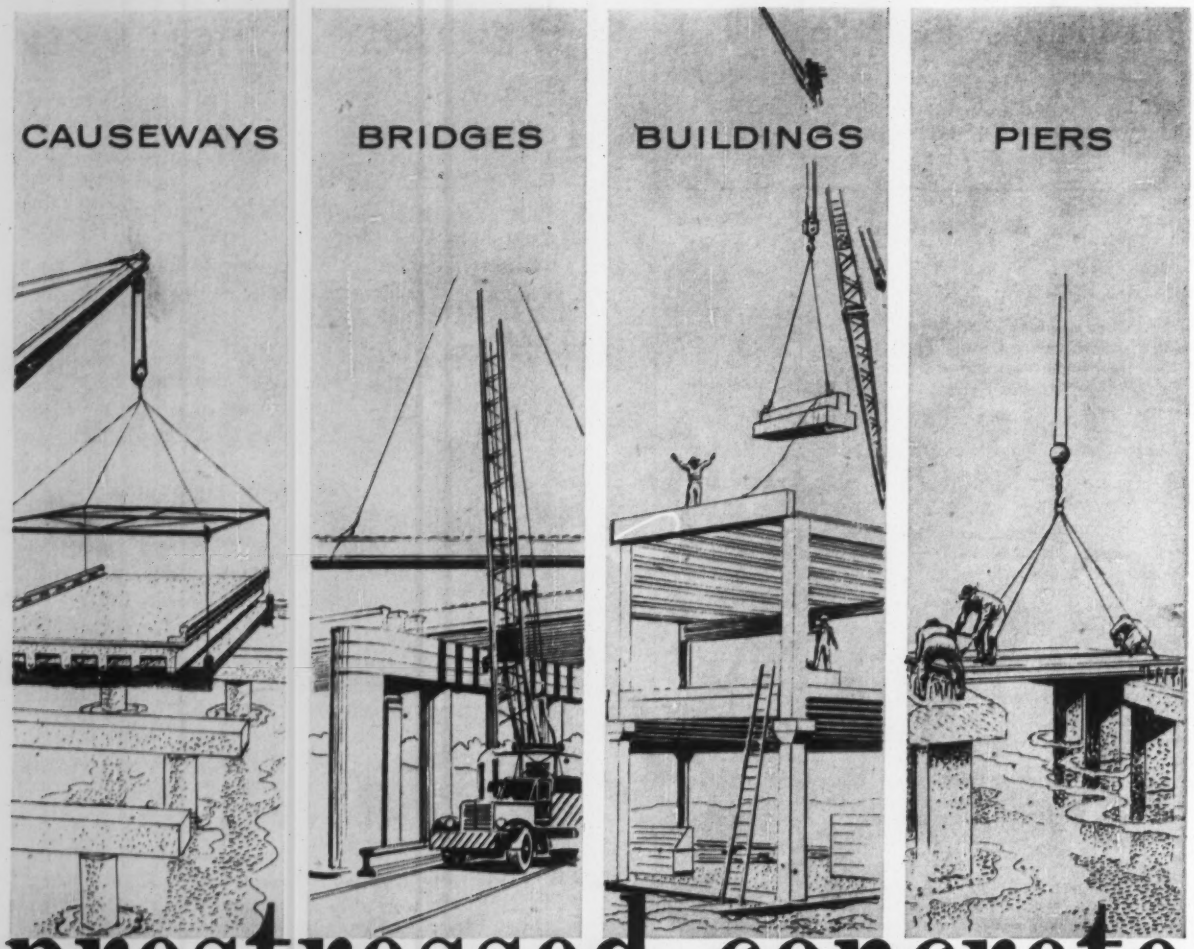
Some time ago, the governor—confronted with pressure from trailer manufacturers who said they would leave the state unless highway rules were eased—"suggested" that state police relax restrictions on overwidth (10-ft wide) house trailers on state highways. The Police Commission agreed to the governor's suggestion.

But Robert M. Faust, director of the police weights and standards division, insists that 10-footers may only be hauled on lowboys, with special permits from the Highway Department. And the attorney general issued a ruling which said trailers over 8 ft in width should be restricted.

POWER LOSS DUE?—In a move that might have direct connection with recent scandals involving right of-way purchases, Indiana's Governor Handley is now considering stripping the road bureau of most of its purchasing functions.

Said the governor, after conferring with Highway Commission members: Vesting of most of the Highway Department's purchasing functions in the State Department of Public Works and Supply would be more efficient than the present arrangement.

BIGGEST SHOPPING CENTER?—A Midwest syndicate wants to develop the Studebaker-Packard factory in Detroit into the "country's largest shopping center," according to plans disclosed after officials of the auto firm lunched with Mayor Albert Cobo and other city leaders. Including a number of office and manufacturing buildings, which one source said would cost $50 million to duplicate, the 56 acre property is assessed at $6.8 million. Studebaker-Packard reportedly is seeking only $4 million for it, however. The syndicate would spend an estimated $5 million developing the center, including new construction plus conversion of some of the existing buildings. The men in the syndicate are not merchants, says the auto firm's real estate representative, but intend to develop the site for commercial use. First floors however, are envisioned as retail sales areas.



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WASHINGTON OBSERVER

- **Housing shows signs of pickup**
- **Military construction shaved 10%**
- **House battles over lease-purchase**
- **A-power plans trapped by politics**

● **Official Washington is more optimistic about the future of homebuilding than it has been in months.** Seasonally adjusted figures on new housing starts show some bounce in May and June after a string of dismal reports for the early months of 1957. It has become almost a certainty that new starts won't come very close to 1 million this year, but most conservative guesses now range around 950,000—whereas a few months back they were around 900,000.

Most encouraging to government housing officials are reports from around the country indicating that builders are finding it somewhat easier to obtain credit. These come as President Eisenhower signs a new omnibus housing bill designed to bolster federal housing programs right across the board: more money for Fannie May to buy mortgages; more money for college housing; more money for grants in urban renewal programs; and lower down-payments for homebuyers using FHA mortgage insurance.

Eisenhower won't use all the housing aids that Congress voted. The slight upturn in current building prospects, plus the Administration's battle to contain inflation, means that much of the new law will be put on the shelf—for use only in the event that homebuilding goes into another serious slump.

—

● **Construction will be restrained by the Administration's spending lid.** One Defense Dept. official predicts the order by Budget Director Brundage to all agencies to hold spending to fiscal 1957 levels will mean a 10% cut in military construction. Other agencies are not so gloomy; the Civil Aeronautics Authority believes there will be little cutback on federal-aid airport projects; Interior Dept. and Health Education & Welfare Dept. officials are worried, but have struck no estimates yet.

—

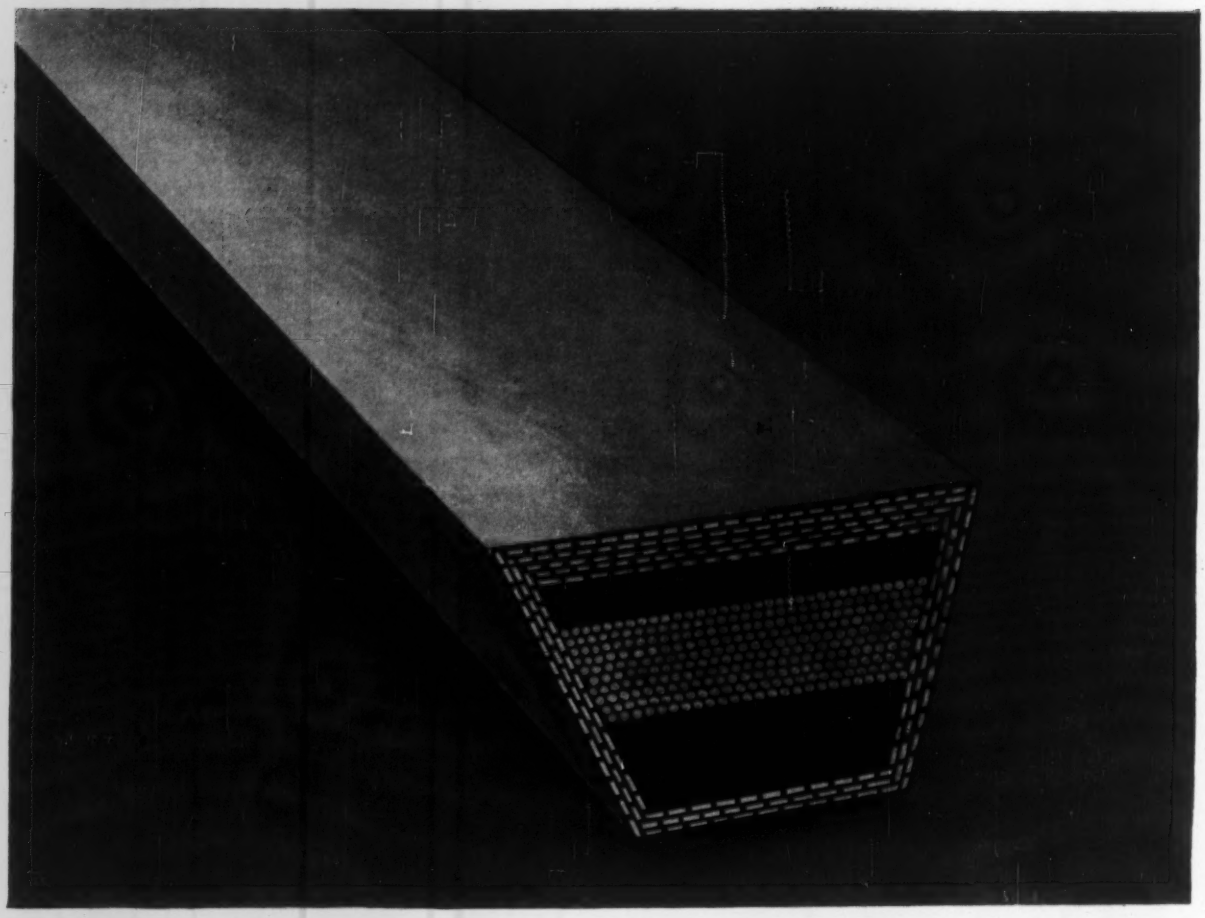
● **Lease-purchase building would total $1.7 billion instead of the present estimate of $714 million for approved projects,** according to congressmen of the House public works subcommittee. That's one reason the group voted to kill the whole program, excepting half a dozen buildings for the District of Columbia totaling an estimated $139 million.

There's bound to be a fight right down to the wire since the Senate has already approved a bill to continue the program another year. The law expires next week unless an extension is signed.

—

● **Plans for building some half dozen atomic power plants are caught in the wrangle between Congressional Democrats and Administration atomic officials.** Unless a compromise is worked out, it could hold up needed atomic legislation until next year. Democrats want the AEC to build several atomic plants which have been proposed by REA co-ops around the country who have applied for AEC subsidies. Republicans plan to carry to the floor of both House and Senate their fight against any committee recommendations for federal plants.

US RUBBER V-BELTS



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- **For years, engineers have sought an overall professional group with the powers and prestige of the doctors' American Medical Association**
- **Establishment of Engineers Joint Council as a federation to speak for its constituent professional societies was an attempt at such unification**
- **But the National Society of Professional Engineers, forcefully representing its membership in national affairs of professional concern has not affiliated with EJC**
- **Now comes M. S. Coover (right) 1956-57 president of the American Institute of Electrical Engineers, with a new approach to unity for consideration** →

EE's Offer Their Idea of Professional Unity

The engineering profession has a new unity proposal to ponder.

Hardly the first and not likely the last, this latest proposal originates with M. S. Coover, who has just finished his term as president of the American Institute of Electrical Engineers. It went out first to the AIEE's 50,000 members with approval of the organization's Board of Directors, and this week it is available to certain other groups throughout the profession for consideration.

The Coover proposal is basically:

- That AIEE concern itself solely with the technology of electrical engineering (and by implication, that all other Founder Societies function solely as technical societies).
- That Engineers Joint Council, the federation now representing engineering societies with a total membership about 250,000, be the medium for inter-society cooperation only on technical matters.
- That Engineers' Council for Professional Development represent the profession in all educational matters.
- That the National Society of Professional Engineers be engineering's sole organization working in promotion of the profession and advancing the status (including economic) of the engineer.
- That to speak for more than its 42,000 members, NSPE somehow must expand its membership to include more than just those legally registered.

(The nation has, according to the Census Bureau, over 500,000 engineers of whom 220,000 are now registered. NSPE claims the census includes too many who call themselves engineers but are not engineering graduates, says that actually only 300,000 are eligible to become professionals by registration.)

In brief, Mr. Coover's proposal to the AIEE would assign the common interests of all engineers to three groups: technological to EJC, educational to ECPD, and professional to NSPE. The so-called Founder Societies of civils, miners, mechanicals and electricals would stick to their technological knitting.

A sampling of reactions to the AIEE scheme indicates that it will have no better chance of acceptance or survival than did the many schemes that have come and gone before. Yet the official sanction given this proposal by AIEE and the fact that it has been presented this week to members of both the National Society of Professional Engineers and the 42,500-man American Society of Mechanical Engineers would indicate that the Coover proposal is in for some serious consideration.

• What they think of it—It's too early for final or official reactions, of course but this much is indicated in a spot check by ENR:

AIEE's hierarchy obviously approves the proposal, but it remains to be seen whether the membership will. It may be of significance that ELECTRICAL WORLD, a McGraw-Hill publication and an influential voice among electrical engineers, this month launched a series of editorials finding fault with the idea.

ASCE has not had the proposal come before its Board of Direction in any official way. From unofficial reactions, it might be concluded that ASCE would be loathe to discontinue the current professional activities of its active Department of Conditions of Practice. There are no immediate plans for publishing the Coover scheme for presentation to society membership.

EJC, although vitally involved, has similarly not been presented with the proposal.

NSPE received the idea at its recent Dallas meeting, and a committee of past presidents was assigned to study it. Unofficially, it can be reported that individuals in NSPE see the Coover proposal as a fresh approach to unity, to be taken seriously. However, alluring as the proposal's assignment of all professional matters to NSPE may be, the stipulation that NSPE expand its membership would be a tough nut to crack while sticking to legal registration as its only accepted definition of a professional engineer.

In NSPE's magazine, AMERICAN ENGINEER, July issue, the Coover proposal is printed in full with an introductory page written by Morris D. Hooven. Mr. Hooven, past president of AIEE,

. . . Latest professional unity proposal

is current chairman of Engineers' Council for Professional Development and also chairman of the liaison committee between NSPE and EJC.

ASME, the mechanical group, is likewise presenting the Coover proposal in its July publication, along with a message from its president saying, in effect, that he personally would like to see ASME go along with the electricals in this approach to unity in the profession.

No official reaction has been heard from the American Institute of Chemical Engineers or the American Institute of Mining, Metallurgical and Petroleum Engineers, both constituents of EJC and neither very strong in NSPE. Neither, apparently, have the dozen other constituent, associate or affiliate societies of EJC considered, nor been consulted, on the proposed realignment of society functions.

Insofar as the AIEE is concerned, it would appear that the proposed shift would require only minor adjustments within the institute. The institute's constitutional objective has been "advancement of the theory and practice of electrical engineering . . . and the maintenance of a high professional standing among its members." And the purely technological has always been its forte. Its committees on professional conduct and registration are a far cry from the civil society's extensive interest in the professional department—conditions of practice, registration, salaries, fees, employment conditions and the problems of younger engineers.

Mr. Coover's successor as AIEE president, Walter Barrett, has said in effect that the institute would need only to relinquish its registration activities to NSPE to effect the proposed changes.

Basic to AIEE's proposal is its apparent decision that Engineers Joint Council has not become, and will not become, the unity organization some still hope it will be. This is evidenced in Mr. Barrett's recent statement on the prospects of an ultimate, overall engineering organization: "I do not expect to see this development and doubt if it would be desirable."

Biggest blow of all would come, of course, to EJC. Now constituted and staffed to fill its self-styled role as "voice of the engineer," this federation of societies (no individual members) is often hamstrung in its activities by the apparent desire of its board's majority to keep it out of any activities that could be construed as lobbying, thus to retain for it the favorable tax status of a scientific or educational group.

Tied to this concern over EJC's tax status is a fear that all its constituent societies, too, could lose their 501-C-3 standings, and become 501-C-6 in the eyes of the Bureau of Internal Revenue. And basic to all these fears over tax status is the all-important fact that the societies will soon be seeking what they hope will be tax-exempt gifts for the construction of a new engineering headquarters building in New York City.

Biggest boon of all in adoption of the AIEE proposal would come, of course, to the NSPE. It would be assigned as spokesman for the profession in public affairs, a role it has continually sought. What this group lacks in age and size it has made up, in part, in the vigor of its activities on the Washington scene, in state capitals and locally. It has grass roots sensitivities to its credit and a tax status 501-C-6 that gives it freedom of movement in political circles.

Although it declined an invitation to join EJC in November, 1951, the NSPE does maintain liaison with EJC. Basic to NSPE's decision to go it alone has been its contention that a society to speak for engineers must be made up of individual members who are engineers; that "engineers" needs a definition, and legal registration is that definition; that the profession's organization should function at three levels, local, state and national; and that it should have powers and finances with which to act.

Whether the Coover proposal is a step toward order remains to be seen. But obviously it puts the always simmering subject of professional unity back on hot front burners.

Contenders for the Unity Organization Role:

Once upon a time, starting in 1852, there was but one engineering society in the U. S., the American Society of Civil Engineers. But it wasn't long before "splintering" began with formation of the so-called Founder Societies—mining, mechanical and electrical.

In 1917, the Engineering Council was formed by these four Founder Societies to meet problems that arose with World War I; and in 1919, a joint conference committee proposed a comprehensive group be formed to coordinate non-technical interests.

In 1920, the Federated American Engineering Societies, composed of 71 engineering and allied technical groups, evolved—with the American Engineering Council as its administrative head. AEC functioned, weakened, and died in 1940.

In 1941, the Engineering Joint Conference formed, made up of presidents and secretaries of the Founder Societies, joined by the president and secretary of the newer American Institute of Chemical Engineers, in 1942.

In 1945, these five groups established Engineers Joint Council.

In 1949, seeking means toward greater unity, an Exploratory Group representing 15 national societies started two years' work that resulted in proposals A, B, C and D. Plan A, recommending EJC as the unity organization, was espoused by EJC to the extent of increasing its size, but it never has constituted inself for individual membership, as recommended in the plan. Meanwhile, in 1934, the National Society of Professional Engineers was formed. It now comprises 45 state and territorial units. NSPE filed a minority report based on the work of the exploratory group (Plan D had named NSPE as the unity organization) and in 1951 declined an invitation to join EJC.

And in 1932, Engineers Council for Professional Development was formed for work largely in the field of guidance, education and training; it is not a "unity" candidate. Neither is the 6,400 member American Association of Engineers, headquartered in Chicago.

And Still Other Proposals:

In addition to the four plans of the Exploratory Group, there have been at least four other unity proposals in the last few years.

In 1946, William Ryan, then president of the Massachusetts Society of Professional Engineers, proposed an organization to be formed around NSPE.

In 1953, the General Electric Engineers Association in Pittsfield, Mass., proposed a "super" unity organization to envelop a technical council patterned after EJC and a professional council resembling NSPE.

In 1946, a committee within AIEE proposed an American Engineering Council with membership of individuals, yet utilizing existing organizations in its activities.

And now in 1957, it's AIEE again.

Ceramic-Tile Wall Panels Enclose 17 Story Building

Excavation work has begun for the First National Bank of Miami Building in downtown Miami, Fla. The building will have a welded steel frame with an exterior facade of precast concrete panels faced with colored ceramic tile.

The structure will be 17 stories high and contain about 450,000 sq ft of usable floor area. Four split-level parking areas in the building will accommodate 350 cars.

Estimated cost of the building is about $6 million. Completion date is set for late 1958.

Architects for the structure are Weed, Russell, Johnson Associates, Miami. Frank J. Rooney, Inc., Miami, and Turner Construction Co., New York City, have combined in a co-venture as general contractors for the job.

Concrete Pipe Association Hears Drain Tile Report

The seventh annual convention of the American Concrete Agricultural Pipe Association in Denver last month featured a report on a proposed ASTM specification on concrete drain tile.

Prof. P. W. Manson of the University of Minnesota described the new spec, which may be ready for adoption this fall. It contains four major innovations to the existing specification:

- A third class of tile, called special, is added to standard and extra quality.
- A lower limit for strength and an upper limit for absorption on *all* specimens tested.
- A 10 minute soak of special tile that may indicate permeability as well as would a hydrostatic test but at less cost.
- Tables and nomographs for computing loads on tile in trenches.

Latest membership strength of ACAPA is 92 drain tile manufacturers representing 156 plants. J. J. Seale, Concrete Conduit Co., Colton, Calif., was reelected president for the ensuing year.

Kings River Project

Start of construction set for 261,000 kw powerhouse

Pacific Gas & Electric Co. is ready to start powerhouse construction at its Kings River hydroelectric project in central California, which will add 261,500 kw to the company's generating capacity when it is completed in 1961.

Contracts have just been awarded for work on two of the project's three powerhouses, and for raising the height of a dam.

Cost of the entire Kings River Project, including transmission facilities, will be $80 million. It includes construction of two dams, Courtright and Wishon; two new powerhouses, Haas and Kings River; and expansion of Balch powerhouse. Total rated capacity for all three plants will be 296,000 kw.

Contracts for expansion of the existing Balch powerhouse and for construction of the new Haas powerhouse were awarded to Rothschild, Raffin & Weirick, San Francisco. When the Balch plant is completed in 1959, its capacity will have been increased from 34,500 kw to 126,000 kw. Haas, to be an underground powerhouse with a capacity of 128,000 kw, (ENR Oct. 18, 1956 p. 26) will be finished in 1960. No contracts have been awarded for installation of machinery and electrical equipment at the two plants, or for construction of the 42,000 kw Kings River powerhouse. Consolidated Western Steel Div., U.S. Steel Corp., has penstock contracts for both the Balch and Haas powerhouses.

Successful bidder for raising Balch diversion dam from its present height of 103 ft to 148 ft was Intrusion Prepakt, Inc., Cleveland. Work on thickening the dam from its base to its present level will start immediately and continue until snow falls.

ASCE to Study Its Works In Water Resource Field

The American Society of Civil Engineers announced last week its appointment of a special task committee on water resources to study the organization's technical activities in that field.

Objective of the committee will be to report to the Board of Direction on how to make activities of ASCE divisions concerned with water supply and water use more effective in protecting and developing the nation's water resources. A resolution of the society's National Capital Section resulted in formation of the task committee.

Its membership will include: W. W. Horner, St. Louis consulting engineer, as chairman (Mr. Horner has been chairman of Engineers Joint Council's National Water Policy Panel); L. S. Bernstein of Niagara Mohawk Power Corp.; Capt. L. C. Coxe, CEC, U.S. Navy; W. E. Darrow, U.S. Dept. of Commerce; Col. A. P. Rollins, Jr., director of the U.S. Army's Waterways Experiment Station at Vicksburg, Miss.; and J. B. Tiffany, Jr., assistant director of the Vicksburg station.

Turnover Trouble

Highway department notes continued engineer exodus

Forty-four resignations in May raised to 78 the number of persons quitting the Colorado Highway Department since Jan. 1, 1957. Of the 78 resignations, 49 were engineers.

The quitting epidemic in May followed the State Civil Service Commission's action of reducing 421 highway employees below the grades recommended in a personnel survey by a private research group.

Among the latest to leave were five engineers who joined the California Highway Department, which recruited in Denver this spring.

A reclassification plan being developed by the Civil Service Commission may solve some of Colorado's problems, according to chief highway engineer Mark U. Watrous. The new plan may enable the department to retain present personnel and attract new workers on the basis of salaries "really competitive with private industry and other public agencies."

John F. Devivier, personnel director, estimated the training cost for the 78 employees who resigned at $125,000. "And it will cost another $125,000 to train replacements or $250,000 in all," Mr. Devivier said.

City to Build Ohio's First Sewage Lagoon

The village of Deshler is on its way to becoming the first community in Ohio to utilize the lagoon method of sewage treatment. The state legislature recently approved a $50,000 grant to help Deshler construct a $135,000 oxidation pond plant.

Cost estimates for a more conventional type of treatment works for Deshler have run between $500,000 and $600,000. Deshler is located 40 miles southwest of Toledo in the northwestern corner of the state.

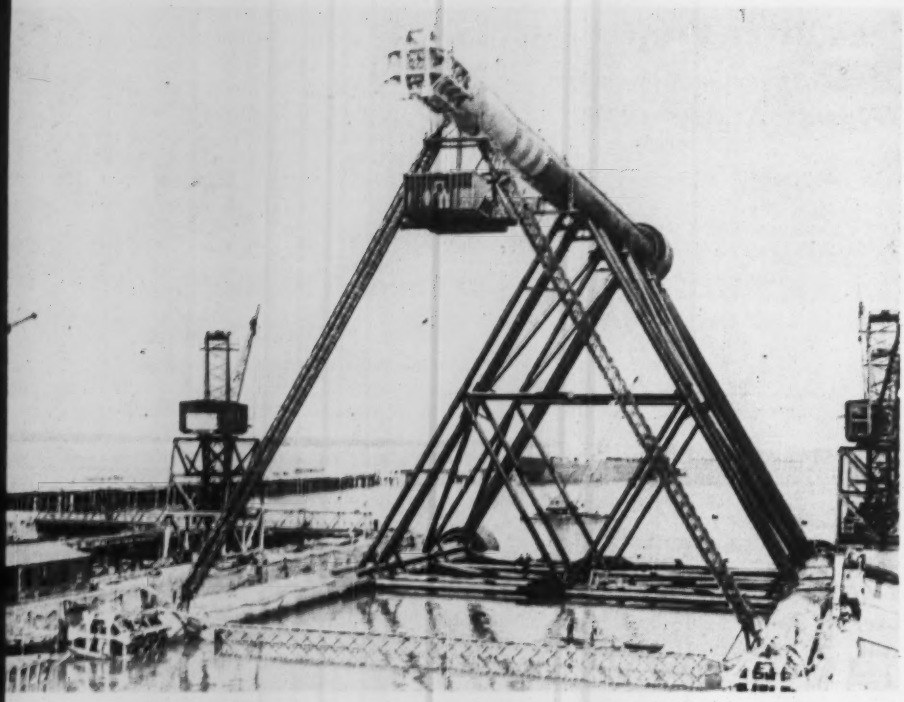
Ohio communities got a green light on lagooning from the State Department of Health in 1953, coupled with a warning that shallow pond disposal might not work as well in Ohio as in the Dakotas, where greater sunshine, stronger winds and less rainfall prevail.

Newest Texas

As of this week, a new link in America's defense system stands in the Atlantic Ocean, some 60 miles southeast of Sandy Hook, and 100 miles east of New York City. The structure is the third of five planned (ENR Aug. 11, 1955, p. 25 and Aug. 16, 1956, p. 26) to be operated by the U. S. Air Force as radar warning stations.

Certainly one of the most spectacular construction operations ever attempted, it provided a task for the general contractor (a joint venture of J. Rich Steers, Inc., and Morrison-Knudsen) which was roughly equivalent to floating a 30-story steel skyscraper on its side, tipping the structure upright, and sinking it to exact position in the open sea in a water depth of more than 180 ft. (Offshore oil drilling platforms have been put down in 50 ft of water, one of the other two Texas Towers stands in 80 ft.) With the tower upended, a 4,000 ton steel barge was floated within the "skyscraper's" legs, attached, and jacked clear of the water.

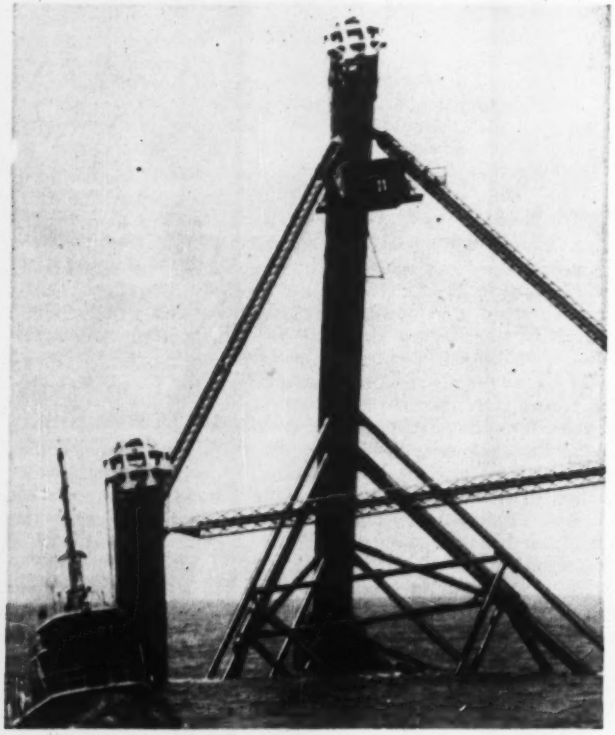
Backed by months of planning, the job was done in 24 hours July 6-7.



1. READY FOR SEA, the leg assembly floats in fabrication dock at Portland, Me. Triangle is 150 ft on a side. Each leg is 314 ft long (including lattice-work at top for jacking devices) and weighs 450 tons. Controls for sinking operation are in cab hanging from top leg, at center. Yard erection was subcontracted to M. W. Kellogg Co., New York.

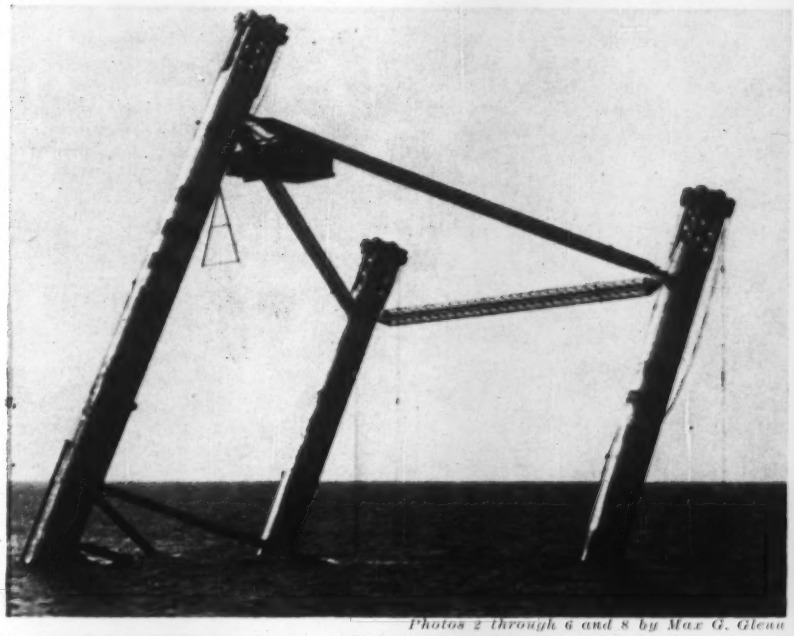
2. TOWING LINES ARE CAST OFF, as tipping preparations begin. Ends of tower legs on which men stand are steel cutting edges 25 ft in dia, 15 ft high, to be jetted into ocean bottom. Eugene Rau, Steers' chief engineer, is in charge for general contractor.

3. STARTING DOWN tipping is controlled by flooding the bulkhead compartments in each leg, with speed of overturning controlled by air in buoyancy struts—6 ft dia pipe which form lower braces of triangle.



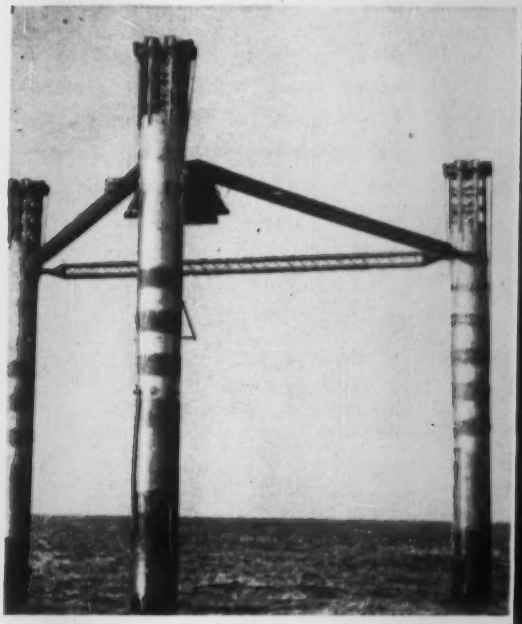
4. OPEN-WORK BOX TRUSS at top is temporary, will be removed when platform is in place. Other struts are pin-connected pipes, 2 ft 6 in. in dia, with top set folded for clearance during tipping. Ocean-going tug in foreground gives comparison for size.

Tower Tilts Into Place as Planned

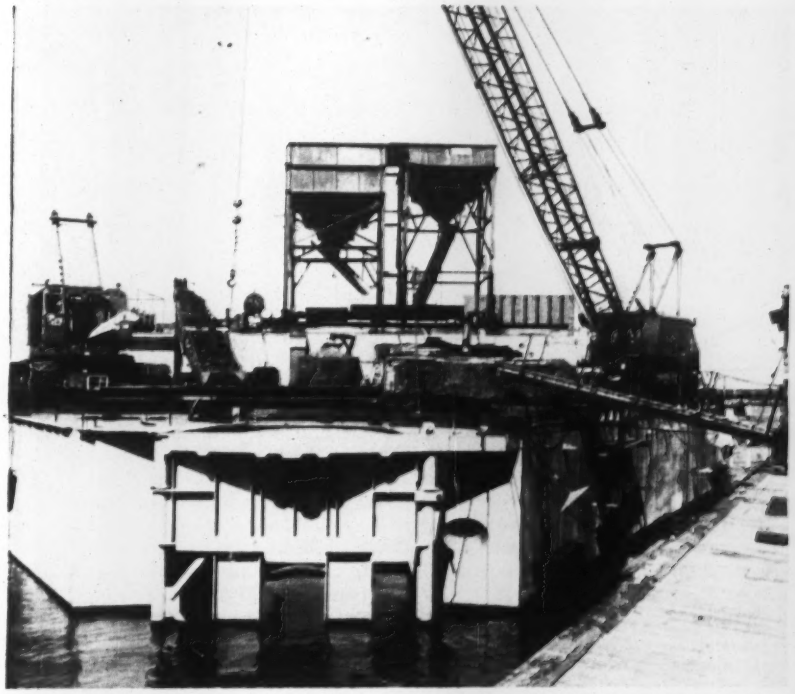


Photos 2 through 6 and 8 by Max G. Gleau

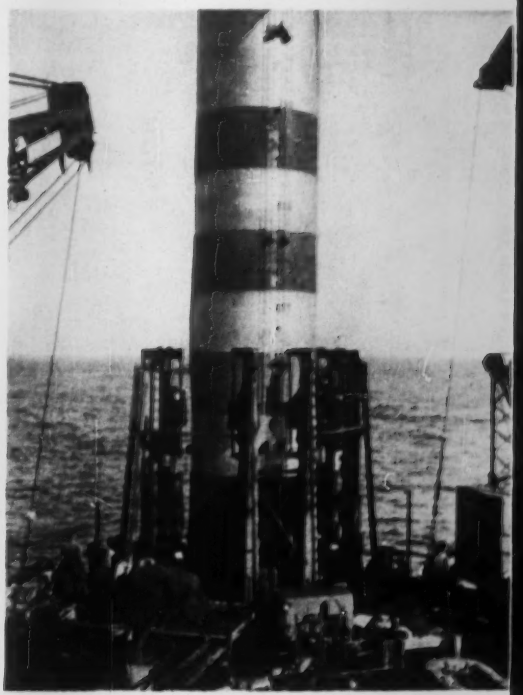
5. ALMOST VERTICAL, legs near final position. Bracing—needed because of great water depth—was designed for Navy (acting as construction agent to Air Force) by consultants Moran, Proctor, Meuser & Rutledge of New York and Anderson-Nichols of Boston. Swinging control cab was Steers-Morrison idea (ENR Oct. 25, 1956, p. 40).



6. FINAL POSITION, 24 hours from start of operation. Legs and platform were fabricated at Portland by Continental Copper & Steel Industries, Inc., a subcontractor.



7. PLATFORM (shown here at outfitting dock) was then floated between legs. Platform is two-decked steel barge, 200 ft on a side, to house Air Force complement of 70 men and radar equipment. For the present it will serve as working platform for construction operations including jetting down legs, partially filling them with concrete.



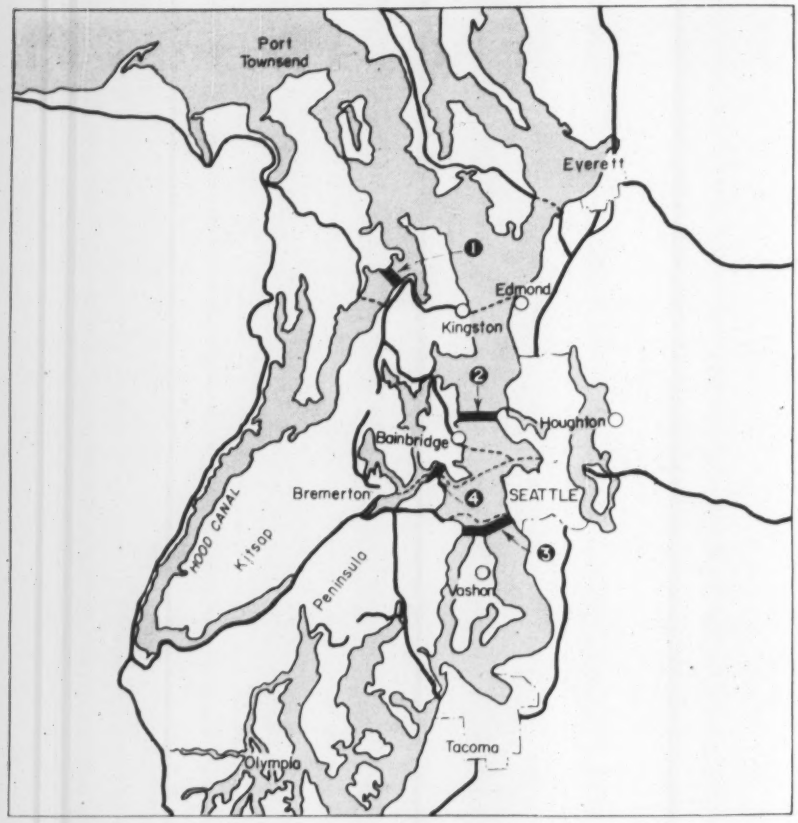
8. WITH PLATFORM HELD by special locking gates clamped around legs, Roebling-type jacks are attached to lift platform. Capt. J. B. Plichta is officer in charge for the Navy.

After years of struggling for a Puget Sound bridge, the constant improvement of ferry service has generated additional traffic to warrant . . .

Seattle's Proposed Bridges:

1—Bridge over Hood Canal
2—Seattle to Bainbridge crossing
3—Seattle to Vashon Bridge
4—Kitsap Peninsula to Bainbridge Bridge

And now . . .



Hood Canal Bridge Found Financially Feasible

A report that it is financially feasible to construct a $17 million toll bridge across Hood Canal on Washington state's Olympic Peninsula has been accepted by the Washington Toll Bridge Authority.

The report was prepared by W. G. Gilman & Co., consulting engineers, as part of a study that also included proposals for improving ferry service between Seattle and the peninsula. In addition to the bridge it calls for two new ferries, costing $5.2 million, widening automobile decks of four existing ferries for $1.8 million and improving ferry terminals, $1.1 million.

The entire program would call for a $30.5 million, 40 year bond issue, which would be in addition to $9.5 million in bonds now outstanding against the ferries. Bridge tolls slightly higher than the fares now charged for a ferry crossing of the canal are planned.

The authority immediately appointed Ralph A. Tudor of San Francisco, John I. Parcel of St. Louis and Ralph Smillie of New York to make an engineering review of the bridge plans. The structure will be a two-lane floating bridge, 8,081 ft long with ferry-slip type bridge approaches to allow for tidal action. When plans have been completed, approved and reviewed by a three-man board of engineers—not yet named—bids for a $30.5 million bond issue will be called for, to handle the entire program.

• **Ferries first**—Improvement of ferry service is regarded as a necessary preliminary toward eventual bridging of Puget Sound. A 1955 survey found that such a bridge, costing nearly $100 million, is not yet financially possible but faster ferry service is expected to generate additional cross-sound traffic and hasten the day when there will be enough traffic to finance the bridge.

Civic groups on the two principal islands in the sound are intensifying their efforts to secure a crossing, since the east-west bridge can touch only one of the two islands, which are several miles apart on a north-south line.

A Vashon Island route was recommended in 1955 by the consulting firm of Coverdale & Colpitts of New York, with a secondary bridge from the Kitsap (western) mainland to Bainbridge Island. It was found that a bridge from Seattle to Bainbridge, which lies directly west of the city, "would best serve and develop the whole area over the long term" but doubts were expressed about the practicability of such a bridge. Its approach piers would have had to be established in water depths of 180 ft.

The Bainbridge Island Chamber of Commerce is asking for a new survey and has come up with a plan that would avoid the necessity of establishing piers in very deep water. This plan was developed by George W. Dennis, a Bainbridge resident employed by the Army Corps of Engineers at Seattle. It would move the terminals at each end of an 11,300 ft floating structure to shallow water. This floating structure, supporting four 12 ft traffic lanes, would be approached at each end through tunnels 3,200 and 4,400 ft long, at depths of 30 and 45 ft. Some dredging would be necessary to provide ship channels 800 and 1,600 ft wide over these tunnels.

• **Navigation problem?**—A major objection to the Bainbridge Island crossing is that it would place a floating bridge across the main body of water between Seattle and the Pacific Ocean, restricting navigation to narrow passages near each shore. The Vashon Island crossing also would involve a floating bridge but it would be south of Seattle, away from the ocean. The bridge between Vashon and the Kitsap mainland west of Seattle

would be a high-level structure, permitting ocean-going vessels to reach Tacoma and south-bound ports without obstruction. Approval of the Department of Defense will be necessary before the bridge can be built at any location.

Practicability of the tunnel approaches to the Bainbridge bridge also is questioned, since steep grades in the tunnel would provide traffic and ventilating problems, engineers say.

Original scheduling called for presentation of bridge plans to the 1959 legislature with a request for a tax subsidy if the project could not be financed from toll revenues.

Trolley Line Electricity Corrodes Water, Gas Mains

In Philadelphia, stray electricity from abandoned trolley underground power rails is getting to water and gas mains —and is corroding them.

Water Commissioner Samuel S. Baxter reports a substantial number of main breaks from this cause and the same story is told by gas company officials.

The problem occurs where a trolley line is abandoned but the track system and substation are still serving other lines in the city. When this happens, current is induced in the abandoned rails even if covered by paving.

Breaks occur in the rails and the electrical circuit, unable to be completed along the rail, is closed through the nearest good conductor. This is often a water or gas main.

As long as the utility main is the conductor, there is no trouble. But if the electrical potential finds an easier path and leaves the water or gas main, a corrosive electrolytic action is set up between pipe and ground.

A simple answer to the problem is for the city to cut all the trolley power rails not in service.

Another alternative is for the transit company to string overhead lines to provide adequate return circuits. But this is expensive for a hard-pressed transit operation.

Approach Plan Is Approved For Remodeled Span

Plans for new Manhattan approaches to handle the proposed doubled traffic of the George Washington Bridge across the Hudson River have been approved by New York City Planning Commission.

The new proposal was made necessary by the plan of the Port of New York Authority to build a second deck on the structure, increasing its present capacity from about 36 million to 63 million vehicles a year.

The bridge terminal on the eastern end is in the narrow upper neck of Manhattan Island, an area heavily congested with apartments and small store buildings, and the present system of approach long has been inadequate for present bridge traffic.

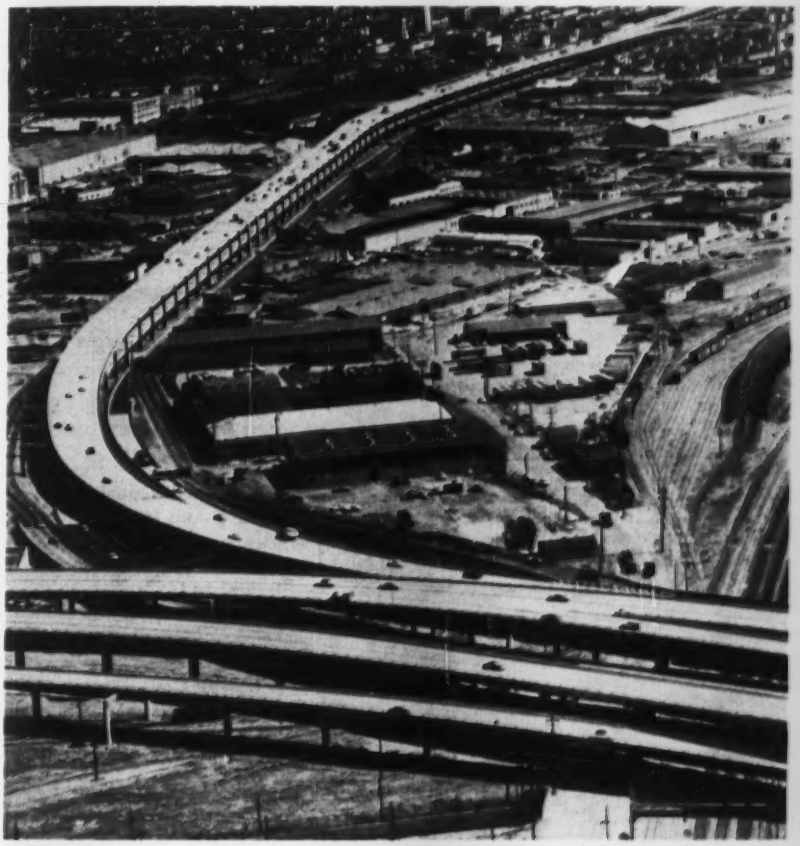
The new plan contemplates a block-wide approach road from west to east across the roughly 1½ miles of Manhattan Island, to connect with a new bridge across the Harlem River and with existing expressways on both the Hudson and Harlem shores of the island.

Included in the program is an elevated bus terminal and a bus turn-around with ramp approaches to and from the bridge.

North Carolina Water Law Defines Duties of Agency

A bill eliminating duplication of effort in water pollution control programs in North Carolina has been enacted into law by the state legislature (ENR Jan. 3, p. 27).

The bill gives the State Department of Conservation and Development sole responsibility for research and maintaining an inventory of water resources. Duties of the State Board of Water Commissioners include functioning as a study group with emergency powers in case of drought or water shortage and recommending laws and policies.



California's First Double-Deck Freeway

California's first double-deck freeway, in Oakland, was opened to traffic early this month.

The 1.3 mi double-deck segment, which cost $10 million, carries four lanes of traffic on each deck, with upper deck for southbound cars, lower for northbound.

Called the Cypress St. viaduct, it is part of the Eastshore Freeway, which runs along the eastern shore of San Francisco Bay.

The double-decker connects with San Francisco-Oakland Bay Bridge (ramps in lower foreground, part of distribution structure at east end of bridge).

The two-level freeway is supported by reinforced concrete piers, rises to height of 50 ft.

Grove, Shepherd, Wilson & Kruge, New York City, was contractor for the California Division of Highways project.

Controlling Another River Pollutant: Salt

A unique method of apportioning the capacity of a stream to assimilate chloride—also applicable to many other pollutants—was made public last week at a reaction-gathering session conducted by the Ohio River Valley Water Sanitation Commission in Cincinnati.

The reactions were sought (primarily from industry) to Orsanco staff proposals of a chloride control system for the Ohio River, proposals that set chloride standards and methods of achieving them.

After an exhaustive two-year study, the Orsanco staff, with the blessing of its Engineering Committee, recommends that chloride concentration at any point on the main stem never exceed a monthly average of 125 ppm at the most probable minimum monthly-average 10 year flow, and that the maximum concentration never exceed 250 ppm.

At last week's session, spokesmen for the chemical and oil refining industries agreed that some concentration limitation on chlorides discharged into the Ohio River and its tributaries was necessary, but felt there is no evidence to justify a maximum concentration lower than 250 ppm, the U. S. Public Health Service standard for drinking water.

Orsanco Executive Director Edward J. Cleary replied that no health question was involved in setting the proposed standards, that corrosion damage to industry's own structures was the commission's primary concern.

Related to the 125 ppm criterion, it can be seen from the accompanying map that the existing chloride load at the most critical point of use (2,400 tons per day at Huntington) is just about in balance with assimilative capacity. (Chloride is an inorganic pollutant whose effect can be minimized only by dilution.)

However, Orsanco's staff points out, with proper scheduling of chloride discharges—by means of holding lagoons at sources—the Ohio River can accommodate seven times the existing load on a yearly basis without exceeding 125 ppm concentration. The chloride "sources" are primarily industrial plants, which account for at least 75% of the total load.

Should new chloride loads necessitate cutbacks, they would be imposed only on industry; municipalities account for little of the load and can neither segregate chloride nor lagoon sewage.

• **Unique method**—To achieve the proposed standards, Orsanco's staff recommends two schemes. One is a system of uniform percentage cutbacks, when necessary during low flow periods, of both main stem and tributary chloride loads, with tributary cutbacks proportioned to the dilution water furnished. The interstate point on the main stem of the river where water users find the highest concentration of chloride would be the control point; cutbacks would be imposed on discharges above this point. Each tributary basin would be given a chloride allotment, based on water flow, and those basins exceeding the allotment would delay their discharges first.

Allotments would be computed as follows (see box also):

1. Main stem = main stem loads ÷ total load at control point × allowed capacity at control point.

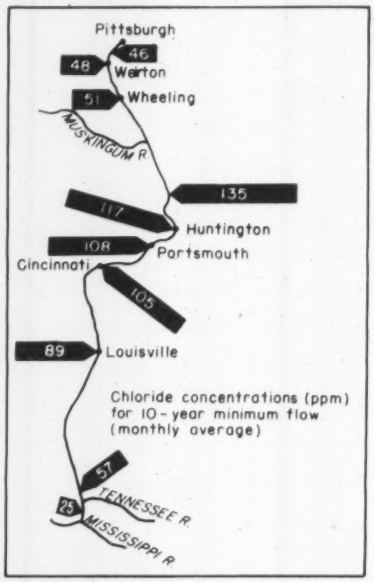
2. Total tributary = total tributary loads ÷ total load at control point × allowed capacity at control point.

3. Specific tributary = flow of tributary ÷ flow at control point × total tributary allotment.

The second staff proposal is somewhat simpler. All tributaries would be permitted to reach (or to cut back to) a chloride concentration equal to that established at the control point (presumably 125 ppm monthly average) and main stem dischargers could utilize the unused portion of tributary allotments. When there would be no more assimilative capacity on the main stem, uniform percentage cutbacks would be imposed on main stem chloride contributors.

Orsanco staffers look upon the second proposal as somewhat less rational than the first, but suitable as an initial approach to the chloride problem.

Both of these proportionate discharge systems would require a system of announcing average daily flow at various gaging stations perhaps once a week and considering this flow as the dilution water available to all chloride discharges for the following week.



OHIO RIVER chloride load is near balance with proposed 125 ppm standard.

• **Why chloride control?**—Orsanco concludes that public water supplies are acceptable if chloride concentration is less than 125 ppm, doubtful if concentration is between 125 and 250 ppm and unsatisfactory above 250 ppm. Similar classifications for industrial supplies were determined to have limits of 50 and 175 ppm.

The Orsanco staff backs its recommendations with impressive evidence:

• A Kettering Laboratory report that says chloride taste threshold for the most sensitive persons is 96 ppm for calcium salts and 121 ppm for sodium salts, which types are predominant in the Ohio River.

• A 175 ppm limit placed on chloride content of sewage effluent purchased by

How Dilution Capacity Would Be Allotted

Assume a control point on the main stem which has a daily chloride capacity of 2,400 tons at a 10 year minimum design flow of 7,500 cfs, 6,000 cfs of which is contributed by Basin A and 1,500 cfs by Basin B. Say Basin A contributes an existing load of 800 tons, Basin B contributes 1,600 tons and there is no main stem load above the control point. Now requests for new loads are received from a main stem industry and Basin A, each of 600 tons. By applying allotment formulas 1, 2 and 3 given in the text, the requirements tabulated below result:

	Existing Load	New Load	Allotment at Design Flow	Reduction Required
Basin A	800	600	1,600	None
Basin B	1,600	0	400	1,000*
Main stem	0	600	400	200
	2,400	1,200	2,400	1,200

* Credit of unused portion of 200 tons of Basin A allotment applied.

the Bethlehem Steel Corp. from Baltimore for use at its Sparrows Point rod rolling mill, and a statement by a Bethlehem engineer that there was evidence of corrosion attack on roll surfaces when chloride content reached 185 ppm.

• A statement from consulting engineer Sheppard Powell of Baltimore that many producers of rolled stainless steel have accepted the general limit of 50 ppm of chloride in roller cooling water.

• A statement by an E. I. du Pont de Nemours & Co. engineer in reference to the firm's Edgemoor, Del., plant on the Delaware River that "salinity above the present average (40-50 ppm) and any increase in the frequency duration of periods of high salinity could increase corrosion of all the metals used in the water handling system."

• **Existing river conditions**—Having established the criteria, the Orsanco report turns to present river conditions and finds that in the stretch below the Muskingum, chloride concentrations are now just into the "doubtful" stage at lowest flow periods (126 ppm highest monthly average concentration).

The investigators found that chloride concentrations in the Ohio have increased 50% or more in the upper river during the past 40 years and that daily concentration 1.6 times the monthly average may be expected.

In choosing a design flow, at the 10 year minimum monthly average, the probability was for a maximum quality impairment of 140 ppm (monthly average) of chloride for an 8 week period once every 10 years. This appeared reasonable to the staff, especially when this design flow imposed no restriction on existing dischargers provided there were no increases in chloride loads.

• **Cost of lagoons**—The Orsanco staff makes clear that temporary delays in salt discharge do not imply reduction or rescheduling of production by industry; chloride wastes would simply be held in lagoons pending later discharge.

Cost of such storage appears to Orsanco to be a "bargain" for benefits derived. This view is based on an estimate by the Columbia-Southern Chemical Corp. that lagoon facilities now being constructed at its Barberton plant for a constant 1,300 ton per day chloride load—more than half the total chloride pollution in the Ohio at low flows—will cost $1.1 million.

The hard-hitting Orsanco staff report was prepared under the direction of Edward J. Cleary. Staffers Robert K. Horton, Harold W. Streeter, W. G. Hamlin and David Robertson made outstanding contributions.

Newly elected chairman of Orsanco, Blucher A. Poole, has appointed a special committee to study the report.

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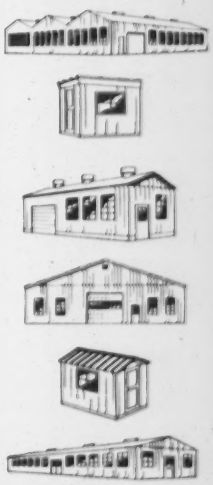

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California Pay Raises

10% increase voted to help hold state engineers

The California State Personnel Board last month voted a 10% increase in pay to almost all of the state government's 5,700 professional engineers "because of continuing recruiting and retention difficulty and the need to maintain an adequate engineering staff in connection with state highway and water programs."

The engineers were among some 16,800 state employees who were granted a 10% adjustment; some 50,200 other state workers were given a 5% raise.

Recruiting directors of the State Department of Public Works and State Department of Water Resources cheered the action. They noted that the departments have been hard put to hire and keep engineers because of salary scales.

The raises, which become effective July 1, were authorized by the legislature and acted upon promptly by Personnel Board.

The legislature, which ended its session June 12, also boosted the pay of Harvey O. Banks, Director of Water Resources, and Frank B. Durkee, Director of Public Works, from $18,000 to $20,000 a year. A salary of $27,500 for each position was originally proposed but the lawmakers scaled it down.

Under the new salary schedule State Highway Engineer George McCoy will go from $16,800 to $18,000 and State Architect Anson Boyd from $16,200 to $17,400.

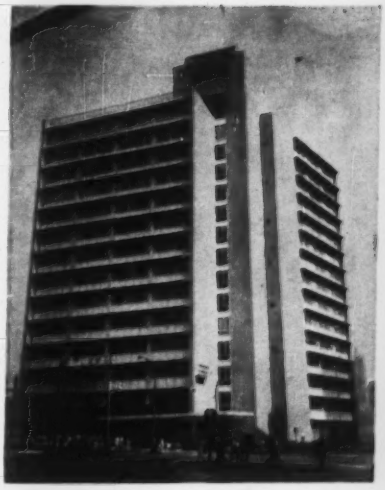
Hills Creek Dam Contract Is Let for $20.6 Million

Contract for construction of Hills Creek Dam on the Willamette River in western Oregon has been awarded to Green Construction Co., Des Moines, and Tecon Corp., Dallas, on a joint venture bid of $20.6 million by the Portland District, Corps of Engineers.

The contract includes outlet works, powerhouse and detour roads and bridges as well as the main dam structure. Work must be completed by the end of 1960.

First work on this $34.5 million unit of the Willamette River Basin project got under way in 1956. Hills Creek project is closely related to the Lookout Point project and the two will be operated as a unit for flood control and power generation.

Hills Creek includes an earth and gravel embankment 1,920 ft long with a maximum height of 335 ft from foundation to crest, and a powerhouse with installed generating capacity of 30,000 kw.



Building's Floor Slabs Will Act as Sunshades

Floor slabs of the American Fore Insurance Group building in Chicago extend beyond the walls of the building to act as sunshades for the windows on the floor below. The cantilevered overhangs also serve as walkways for window cleaning.

The 15 story building, one of Chicago's few examples of postwar office building construction, has a reinforced concrete frame. The floor slabs are of two-way reinforced concrete, 7½ in. thick, with a 3 in. fill for electrical conduits and floor finishing.

Foundation girders carry loads from offset columns to 56 ft deep caissons. Site restrictions and footings of previous buildings prevented placing of the caissons beneath the building columns.

The building is completely air conditioned. It contains about 230,000 sq ft of rentable floor area.

Wacker-Jackson Corp. is owner and builder. Alfred Benesch & Associates was structural engineer and Loebl, Schlossman & Bennett were the architects. All are from Chicago.

Navy Contracts to Convert Island to a Jet Airfield

What is said to be the largest contract awarded in San Diego by the Navy in recent years has been given to a four-firm combine for construction that will convert rocky San Clemente Island into a jet airfield and missile base.

The $6.4 million contract, for first phases of the project, went to a combine composed of: Cox Bros. Construction Co., Stanton, Calif.; J. E. Haddock, Ltd., Pasadena; L. E. Dixon Co., San Gabriel, Calif., and the Arundel Corp. of Baltimore.

The island, 60 miles west of San Diego, is slated to become the Navy's main missile center on the Pacific Coast, after a 3 year construction program.

Covered under the contract is a 9,000 ft runway for jet planes which must be cut out of the rocky hills that compose the island. Naval officials report that site preparation alone will include 8 million cu yd of earthwork. Also included in the contract is a project for rehabilitating the existing runway of a small airfield. Later contracts will cover construction of barracks, shops, mess halls and other facilities for a self-contained base.

Briefs . . .

• **Restudy**—A second economic survey to determine the benefits industry would derive from a proposed $227 million Tennessee-Tombigbee canal is under way. The canal originally was authorized by Congress in 1946, but funds for the project were never appropriated. Last year, Congress allocated $160,000 for a resurvey to be conducted by the Mobile District, Corps of Engineers. It is scheduled for completion some time in 1958.

• **Powder fastener code**—The Powder Actuated Tool Manufacturers Institute, Inc., has developed a code covering operation of powder-actuated tools and aimed at insuring maximum safety in their use. The code was promulgated to serve as a guide to state agencies in creating regulations covering the tools. Key to the code is the recommendation that only qualified operators be permitted to use cartridge-firing fastening tools. An operator becomes qualified upon completion of a prescribed course and written examination.

• **Structural design trends**—The Third Annual National Construction Industry Conference scheduled for Dec. 4 and 5 at the Congress Hotel in Chicago will discuss creative trends in structural design. Four half-day sessions will be devoted to consideration of the form, materials, methods and application aspects of structural design. The conference is being sponsored by Armour Research Foundation of Illinois Institute of Technology.

• **Guam AF housing project**—Construction of a $20 million housing project for military personnel at Anderson Air Force Base on Guam will begin this fall. The project will contain 1,050 units. Both single and duplex buildings will be built. All quarters will be of reinforced concrete construction to withstand typhoon winds which strike the island on occasion. Daniel, Mann, Johnson, & Mendenhall, Los Angeles architectural-engineering firm, did the planning and engineering.

Michigan Model 175A loads crushed stone into stationary hopper at end of 480-ft conveyor leading to concrete batch plant.

6,750 cu ft of concrete per hour,

from automatic batching system fed by Michigan Tractor Shovels, paces Peter Kiewit paving crew

Peter Kiewit Sons' Company, Omaha, started construction of the new Minot (North Dakota) Air Force Base as originally planned for jet interceptors. But when the Air Force decided to base B-52-type heavy bombers there as well, a longer, wider, stronger runway became a sudden necessity. Modified plans doubled width to 300 ft, extended length well beyond the original 8100 ft. Key installation was a 50 ft ribbon of concrete, 16 inches deep, centered along the full length of the runway. To finish the greatly enlarged contract ahead of penalty date, concrete pours had to average 2,000 cubic yards per 8-hour day.

Kiewit owns 16 Michigans, two used here

Faced with this tight schedule, the Kiewit crew turned to an automatic concrete batching plant *and modern high-speed material feeding methods.* According to R. D. Wilson, Kiewit Area Manager, the *entire* paving

Normal carry position, slightly above ground level, eliminates possibility of stone-crushing dozing action; yet permits high-speed travel without spillage-loss.

operation was planned around the known productive ability of Michigan Tractor Shovels. Two of Kiewit's 16 Michigans, both big Model 175As, were brought in to feed the batching plant via mobile and stationary hoppers and automatic conveyors. Handling *3,200 tons of aggregate per day,* these 2¾ yard Michigans had to deliver heaped buckets every time—and they did! Their big loads, *delivered fast,* kept plant at peak production of 180 batches (each 37.4 cu ft) per hour, day after day . . . making the job possible—*and profitable!*

Michigans eliminate pulverizing problem

One of the major advantages of the Michigans was that, despite their speed, the big low-pressure tires compacted—but never pulverized—the stone underfoot. Thus Kiewit eliminated a major problem—the crushing and grinding of aggregates often experienced when crawlers are used. Trucks delivering the stone dumped at the edge of the air field; there the Michigans took over. These fast, highly-maneuverable units loaded the material, carried it up steep ramps to build and maintain huge stockpiles.

"Fast, dependable, easy to repair"

"Another reason we put Michigans on the job was we knew they require very little maintenance," says Paving Supt Max Woodard. "When repairs *are* necessary, excellent accessibility makes it an easy job. We've also found these machines have enough power to do anything we want. They're fast, too. Our operators like the way they handle. *We* like the way they kept those hoppers full. Fuel? One tank of diesel oil (50 gallons) keeps them going all day long! That torque converter's good and the power-shift transmission is a big improvement over other machines. Michigans have done a nice job for us."

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Chances are, Michigans can do a "nice job" for *you,* too, no matter *what* bulk materials you have to move. But there's an easy way to find out first hand! Simply ask your Michigan Distributor for a free demonstration—no obligation, of course. If what you see looks good enough to buy—and we think it will—your distributor has a wide range of purchase plans . . . including Clark's popular Lease-Purchase which lets you put one or more Michigans to work *without spending a cent of capital.*

Clean design of bucket mechanism gives operator excellent visibility when dumping into hopper.

Another of Peter Kiewit's Michigans serves as all-around handyman on company's Indiana Turnpike contract. This 102 hp 2 yd Model 125A lifts up to 11,000 lbs, carries 5,500 lbs at 4 mph.

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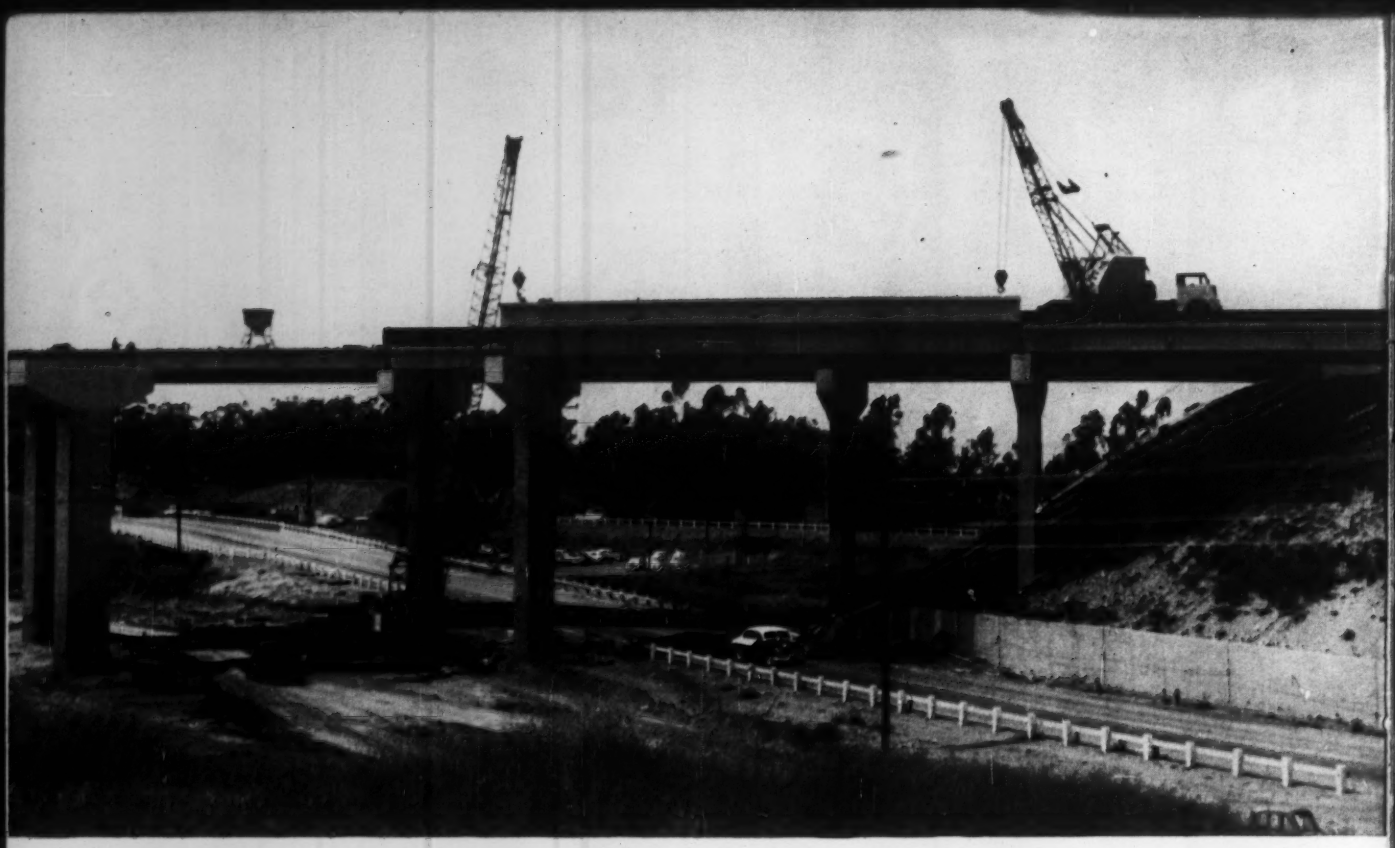


PRESTRESSED CHANNELS are used on medium length spans. The span for the Kidder Creek bridge is 50 ft. Units were hauled 225 mi from fabricating plant to bridge site.

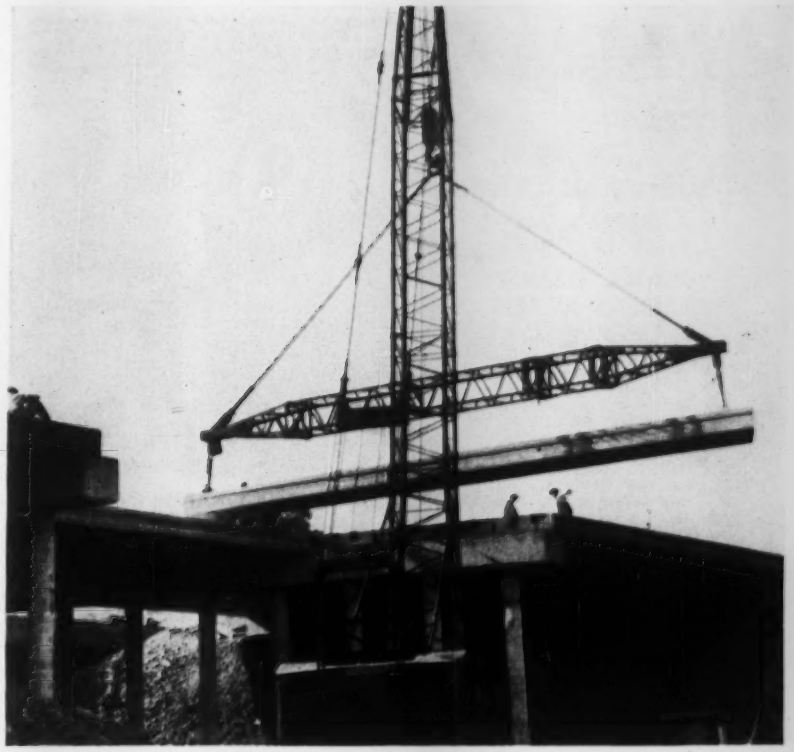
Why Are

Nearly 100 prestressed concrete bridges are involved in recent, current or near future construction programs of the California Division of Highways. More than half of these are in service or will be completed soon. A remarkable feature of this development is that the third and fourth prestressed bridges on the California highway system were completed in 1954—only three years ago.

Tempo of the prestressed bridge program in California has reached such a crescendo that the state Bridge Department has developed complete sets of design standards, which speed the work of turning out plans. Another important factor in development of prestressed bridges in California is the availability of commercial girder casting facilities.

The big dollar size of the California highway construction program has enabled it to progress swiftly in prestressed girder design. The annual highway construction budget is now up to $205 million a year with some $74 million being spent on bridge construction. The program is increasing every year.

There have been far more prestressed bridges designed and built in the northern part of the state than in the south-



PRESTRESSED GIRDER is set in place on a California bridge job. The Hercules overcrossing is one of many prestressed designs in the recent California highway program.

FLAT SLAB is simplest prestressed unit and is used mostly on short spans. The Forbes overcrossing has 45 ft long prestressed members.

Many California Bridges Prestressed?

land. One reason for this is that the two leading fabricators—Ben C. Gerwick, Inc., and Basalt Rock Co., Inc.—are located in northern California. Another reason is that there are more stream crossings in the northern part of the state and there is more construction over existing highways. In such cases, use of falsework would present problems and the precast units made possible through prestressing can compete economically with cast-in place concrete. And, in many instances, prestressing is competing successfully with steel.

In southern California, a lot of freeway and highway construction is now on new alignment or over dry arroyos where use of falsework is no problem. In addition, southland contractors have become extremely adept in building concrete box girder structures—which means that prestressed bridges in many cases cannot compete economically. In isolated areas, precast-prestressed units with reduced jobsite labor costs can compete successfully with normal concrete structures.

• **Design standards**—The California design standards are slightly different from those currently being proposed as AASHO standards. Main reason is that the California specifications were under development before it seemed obvious that national standards were desirable. And because California fabricators are keyed to the current standards, the AASHO standards will probably be little used in California. There will be enough prestressed bridge business to keep the California fabricators busy on local bridges.

Most of the bridges that have been built or that are now under construction were custom designed. That is, in each instance the designer had to analyze the site conditions, select the type of member to be used (in some cases nonprestressed cast-in-place structures have been bid competitively), and develop the prestressed design. But it soon became apparent to Fred Panhorst, assistant state highway engineer-bridges, and Art Elliott, bridge engineer-planning, that standards should be developed. Two sets are now in existence that have been worked out under the direction of Ralph Hutchinson, bridge design engineer. Standards for slabs and inverted-U or channel members were developed by J. G. Standley, Jr. Standards for the larger I and T girders were developed by W. J. Jurkovich.

The California designers do not specify the particular type of prestressing to be used. Instead, they indicate the prestressing force required and the eccentricity involved. They leave to the contractor selection of the type of strands, the number of tendons needed as well as the anchorage and prestressing method—all of this, of course, subject to review by state engineers. Also left to the discretion of the contractor is the choice of pretensioning or posttensioning.

A particular prestressing method is accepted only after extensive tests. Emphasis in the test program is given to the anchors. And, once such tests are made, that particular method is considered good for all future work except for nominal tests for each job to make sure no changes have been made in the design of the anchorage and materials used.

Standards have been developed for slab units spanning 19 to 40 ft, for channels spanning 30 to 60 ft and for I and T girders spanning 50 to 100 ft. No standards have been devoloped for longer units, although one California design spanned 115 ft with prestressed box girders. All standards are designed for AASHO interstate-system loadings.

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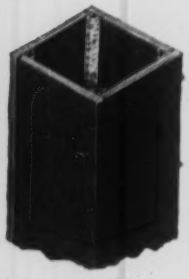

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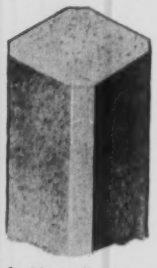

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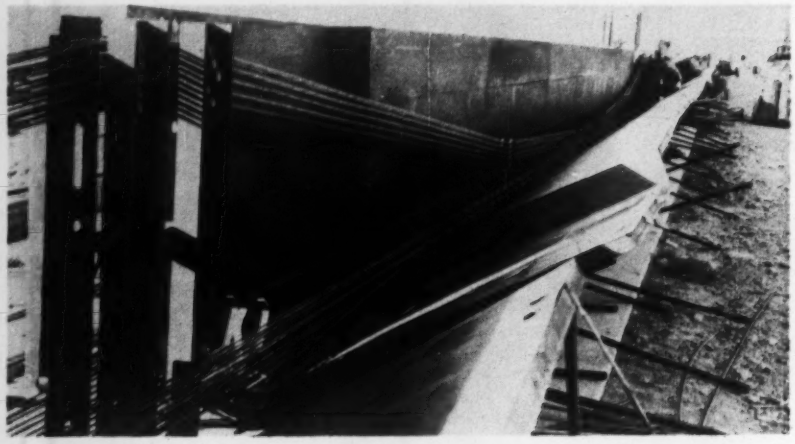
. . . Prestressed slabs for California bridges



DEFLECTED STRANDS for heavy pretensioned girders is a new development in California prestressed practice. They permit prestress to be varied advantageously.

• **Prestressed slabs**—By far the simplest units are the prestressed slabs. These units are used for shorter span interchange and grade separation structures and where headroom is restricted.

The California slab standards are worked out for spans in 2 ft increments from 20 to 40 ft as well as for 19 and 35 ft spans. The standard slab units are 4 ft wide and are 12, 15, 18 or 21 in. deep. With the exception of the 12 in. slabs, which are solid, the units have 3 cylindrical longitudinal voids—8 in. dia for 15 in. slabs and 10 in. dia for the 18 and 21 in. slabs. Purpose, of course, is to reduce weight and, consequently, necessary prestressing force. The voids may be formed with cardboard tubes or with concrete pipe.

Except for the longest spans, where only the 21 in. deep slabs may be used, the designer may select slabs from two or more sizes. Difference is that the shallower slabs require more prestressing for the same spans and thus may cost more.

For example, for a 20 ft span, a 12 in. slab requires 275,000 lb of working prestress force, a 15 in. slab needs 200,000 lb, an 18 in. deep unit calls for 165,000 lb and a 21 in. thick member needs only 155,000 lb. These working forces are for straight line stressing as would be done in pretensioning.

Strands in the deeper units may be arranged in a parabolic pattern as in post-tensioning (or for pretensioning using deflected strands). This further reduces the required working force to 135,000 lb for the 18 in. thick 20 ft span units and to 125,000 lb for the 21 in. thick members of similar span.

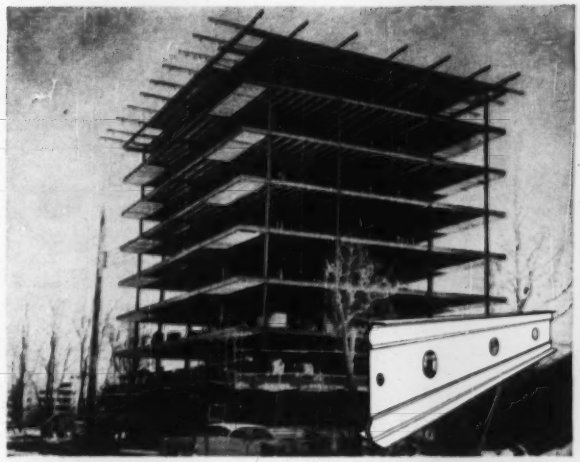
The specified working force is the total force remaining after all losses, including those due to plastic flow and shrinkage of concrete as well as steel creep. The state standards assume steel stress losses due to shrinkage, creep and sequence stressing of 24,000 psi for post-tensioning and 30,000 psi for pretensioning. And provision must also be made for losses peculiar to the prestressing system used such as friction and anchorage takeup.

The slabs are held to supporting bents by No. 6 dowels inserted in 3 in. dia holes in the slabs and grouted. Transverse connections are either post-tensioned cables or ⅞ in. rods or bolts. The rods or cables are threaded through 3 in. holes in the slabs that are located at midspan diaphragms for the longer units. Grouted keys along the sides of the slabs complete the assembly making the adjacent slabs integral deck units. The deck then gets from 2 to 6 in. of bituminous type surfacing.

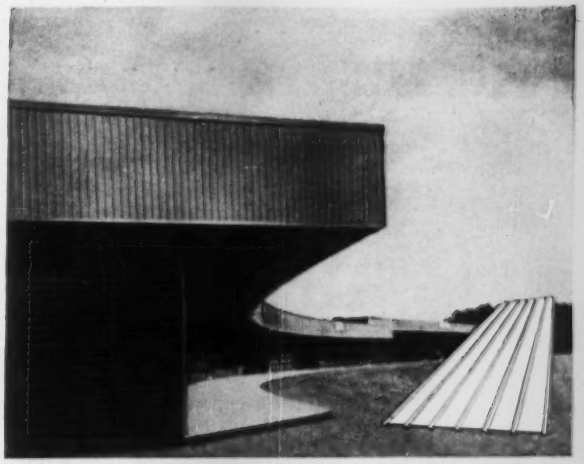
An example of slab construction is the Forbes overpass on U. S. 101, north of San Francisco. This was designed before the standards were developed so details are not identical. Slab construction was adopted due to limited headroom.

The bridge is actually a pair of structures each having three 45 ft spans. A total of 72 slabs were required, each unit being 4 ft 5 in. wide by 18 in. deep. Pretensioning is provided by 50 strands per unit. Each strand is ⅜ in. nominal diameter and is composed of 7 wires. Of the 50 strands, 26 are straight and 24 are deflected, or harped. The slabs were fabricated by Ben C. Gerwick, Inc., acting as supplier for Chas. L. Harney, Inc., general contractor on the job.

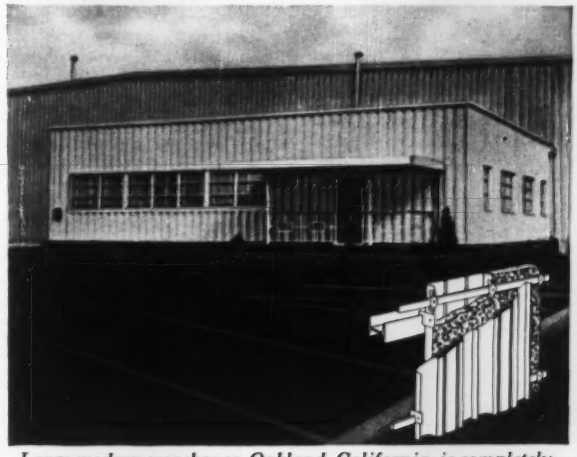
• **Channel girders**—Standards for prestressed girder units in the form of an inverted U or channel shape provide for units spanning from 30 to 60 ft. These members are similar to the prestressed slabs except that they are



Forty-building luxury apartment development located in New York City gained 160 extra rental units using nailable joists. Builder: Alfred Levitt.



Cleveland's Parkland, $50,000,000 residential and shopping community, gets its good looks with ribbed decking. Project developer: Don Loftus. Architect: W. E. Harris.



Large modern warehouse, Oakland, California, is completely enclosed and insulated with curtain wall panel. Owner: Bigge Drayage Co. Engineers: D. Y. Long Co.

Kemline, Inc., manufacturing plant in Edgely, Pennsylvania, uses specially fabricated "C" section trusses for wide-span flat-roof structure.

Now a complete structural system—

Stran-Steel joists, columns, decking and curtain wall

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VERSATILITY—Many structural variations are possible with this versatile system in the design of walls, roofs, partitions, canopies, floors, even entire buildings.

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STRENGTH—Stran-Steel nailable joists, for example, have a yield point of 40,000 p.s.i., approximately 20% higher than that of most commercial mild steel. This extra-strength weight advantage prevails throughout the range of these products.

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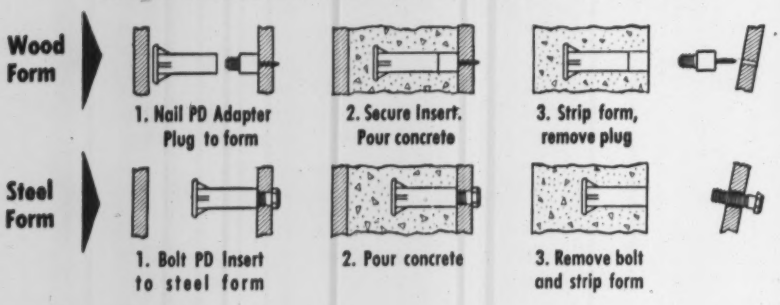
Spot before casting. Spotted on wood or steel forms before concrete is cast, PD Inserts are left as threaded metal holes embedded in concrete at desired points when forms are stripped.

Next step: Make fastening by threading bolt into non-corrosive, precision die-cast PD Concrete Insert.

How PD Concrete Inserts are used with wood or steel forms


Wood Form
1. Nail PD Adapter Plug to form
2. Secure Insert. Pour concrete
3. Strip form, remove plug
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1. Bolt PD Insert to steel form
2. Pour concrete
3. Remove bolt and strip form

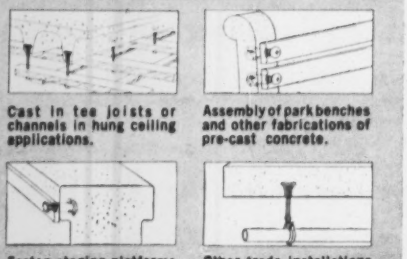
Research tests show high tensile and shear strength of PD Concrete Insert.

Table shows results of recent tests on PD Concrete Inserts conducted by an independent testing laboratory. Concrete in which Inserts were cast had compressive strength of 3500 psi at 28 days. Actual compressive strength was 3760 psi when tests were made.

Holding Power

Cat. No.	Bolt Size	Tension (Pounds)	Shear (Pounds)
PD15	¼-20	2100	2000
PD25	⅜-16	3125	3300
PD35	½-13	4675	5050
PD35 with PD35AP	½-13	5100	5450
PD45	⅝-11	5600	5740
PD55	¾-10	5700	5750

Here are a few of many uses for PD Concrete Inserts.



Cast in tee joists or channels in hung ceiling applications.

Assembly of park benches and other fabrications of pre-cast concrete.

Fasten staging platforms or cat walks in construction of concrete bridges.

Other trade installations are simplified when Inserts are cast in slab structures.

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★STAR PRECISION DEVICES, INC.
142 LIBERTY STREET NEW YORK 6, NEW YORK

. . . California bridges

U-shaped rather than having cylindrical voids.

All channels are 4 ft wide. Smallest prestressed channels are 2 ft deep, as compared with the largest slabs, which are only 21 in. deep. The channels have a 6 in. thick deck section and tapered legs with 8 in. minimum thickness.

Standards for 2 ft deep channels range from 30 to 40 ft span in 2 ft increments, with the addition of standards for 35 ft span units. Deeper channels are listed in 5 ft increments, with spans for the 2½ ft deep units ranging from 30 to 50 ft and for the 3 ft deep members ranging from 40 to 60 ft.

Here again, the deeper units require less prestressing force. For pretensioned 40 ft units, the 2 ft deep channels require 385,000 lb prestress working force, the 2½ ft deep members need only 305,000 lb stress and the 3 ft deep members must be stressed to 265,000 lb. This compares to a 485,000 lb working force for the 21 in. deep, 40 ft long slab units. Bent mounting and transverse connections are similar to the slab units.

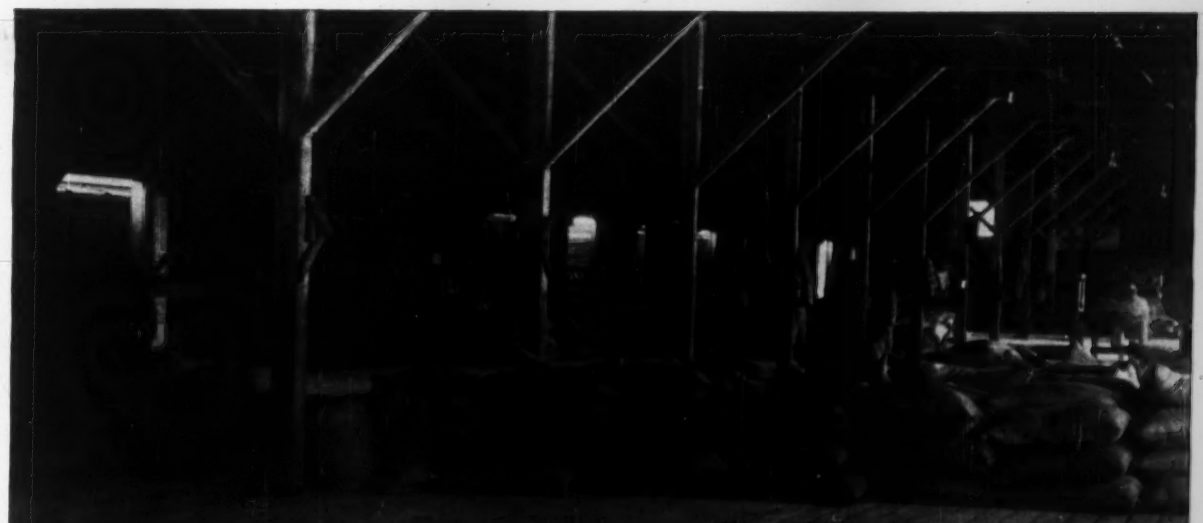
The Kidder Creek Bridge on a feeder highway near Yreka, Calif., is an example of channel unit use. The 50 ft span, 2½ ft deep units fit the standards. The fabricator—Basalt Rock Co., Inc.—selected four 1 in. dia and two 1⅛ in. dia rods to provide the 395,000 lb post-tensioning in each of the 100 channels. The 21 ton units were cast at Napa, Calif., and truck hauled 255 miles to the job for delivery to the general contractor—Peter Kiewit Sons Co. Four units were manufactured each working day and delivered to the jobsite at the rate of 8 every other day.

• **Long span girders**—Greatest application of prestressing on California highway bridges has been made on longer span structures using I- or T-shaped girders.

Standards have been developed for both in 6 depths from 3 to 5½ ft in 6 in. increments. According to the standards the I section is best suited for a depth-to-span ratio of about 0.06 for girders spaced on about 7 ft centers. Thus, the I girders are useful for spans up to 100 ft.

T-girders, on the other hand, are useful for depth-to-span ratio of 0.05 for a 6 ft girder spacing. These are also applicable for spans up to 100 ft.

These I- and T-girder standards are so new that no bridges designed by use of the standards have yet been built. Most of the similar girder bridges have used slightly different dimensions. Use of standard dimensions will enable fabricators to accumulate forms that



On the humid Gulf coast . . . Penta-treated decking licks decay and termites in warehouse and wharf installations

(photo, courtesy of Texas & New Orleans R. R.)

1955—184,012 board feet of clean Penta-treated decking installed in Gretna Wharves, Gretna, Louisiana.

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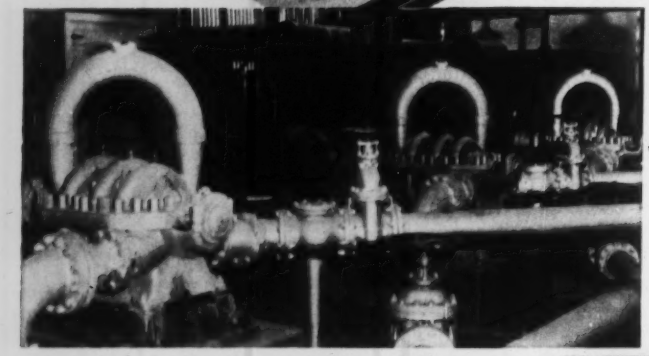
Being strapped in for another record-shattering run is Colonel John Stapp, USAF, who, through piloting of the Northrop sled, has become the "fastest land-based man on earth."

Air Force technicians make final settings on six rockets which propel sled.



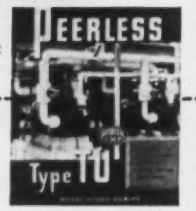
Shown above are three of the four 4" TUT-14 3-stage Peerless centrifugal pumps that form the water-supplying unit. Running at 1750 RPM, these pumps move 500 GPM to the braking system which is 500 feet away from the pump installation.

PEERLESS PUMPS SUPPLY WATER FOR STOPPING NORTHROP'S ACCELERATION TESTING SLED

How violent are the reactions of a man to severe, blinding acceleration? Does he black out, maintain equilibrium, lose senses? And what happens under sudden, screeching deceleration? How many G's can he be expected to withstand and still function?

Answers to these and many other questions in the fields of aviation, physics, and environmental physiology are being found with each successive test by Colonel John Stapp, USAF, and his flying sled. Truly a "rocket on rails," this contribution is providing invaluable data for science by duplicating the stresses of flight on man, *on the ground.*

A highly important segment of this sled project, namely that of braking the vehicle, is dependent on the reliability of the pumps that supply the unique water-trap braking system. Performance of this vital task has been delegated to four Peerless Type TUT 3-stage centrifugal pumps. Here is one more instance where good design, sound construction and skillful application add up to a quality Peerless installation. Whatever the use, no matter what the requirements, there is a Peerless pump that will do the job and do it well. *For remember, Peerless stands for performance.*



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meet the standards; this should have a beneficial cost result.

The long-span girder standards differ from the slab and channel standards in that the member cannot simply be picked off a chart for all girder spacings and depths.

Charts are available for the I-girders for 6 ft and 7 ft spacings and for all of the various depths. Similar data are to be obtained for T-girders from programs fed into the California highway department's electronic computer.

The charts give the required prestressing forces for various loading conditions.

Since it is not always possible to use one of the standard girder spacings, the standards also include a design procedure. However, the charts and tables are quite useful for making economic studies, since all items can be readily obtained.

Cross section of the bottom portion of both I- and T-girders is the same. Both standard units have a 7 in. thick web. Bulb at the bottom is 1 ft 7 in. wide for the bottom 6 in. with a 6 in. taper from full width to web thickness. The I-girders act as composite members with a 7 in. thick cast-in-place deck. Thus, a 4 ft deep I-girder would have an effective depth of 4 ft 7 in. No. 3 stirrups at 12 in. centers bond the deck to the girder.

T-girders include in their depth a 3½ ft wide deck section that tapers to a minimum thickness of 6 in. Thus, for a 6 ft girder spacing, only 2½ ft of deck need be cast in place between each pair of girders.

An outstanding example of this type unit is the Hercules overcrossing on U.S. route 40 northeast of San Francisco.

The overcrossing consists of two parallel bridges one of 8 spans and one of 9 spans. Span length is 79½ ft. The 136 T-girders are each 3 ft 10 in. deep by 4 ft 2 in. wide. Note that these dimensions do not correspond to standard dimensions; the structure was designed before the standards were developed.

Prestressing force in each girder is 550,000 lb. The fabricator—Basalt Rock Co., Inc.—chose to use seven 1¼ in. dia post-tensioned bars to obtain this force.

General contractor is McCammon-Wunderlich Co.

• Casting yards available—Although some of the California bridges have been cast in place and post-tensioned and others have been cast on the site of the work, most of the prestressing is now done at casting yards or plants and the girders then hauled to the job.

At present, two northern California firms—Ben C. Gerwick, Inc., and Basalt Rock Co., Inc.—are doing the greater percentage of the work. Other firms have also been involved. For example, Judson Pacific-Murphy Corp. has established a casting yard at Richmond, Calif., and currently is supplying girders for interchanges on a freeway job near Redwood City. And in southern California, the Concrete Conduit Co. based on long experience in pipe casting has recently completed construction of eight desert bridges in Riverside County with members cast at its Azusa, Calif., plant.

Other firms have indicated a desire to participate in the increasing program thus assuring a good competitive situation.

The Ben C. Gerwick, Inc., casting yard is located at Petaluma, Calif., on an arm of San Francisco Bay. This permits shipment from the plant either by barge, rail or truck.

The casting yard was established many years ago for precast concrete piles and for precast waterfront structural elements.

Jobs that have gone through the plant include wharfs in the San Francisco Bay area for Union Oil Co. (ENR Oct. 21, 1954, p. 34) and Standard Oil Co. of Calif. (ENR Nov. 13, 1947, p. 112), as well as many of the precast elements for the foundations for the Richmond-San Rafael Bridge (ENR March 4, 1954, p. 30).

Thus, the Gerwick organization had a facility available that could be adapted to the burgeoning prestressing business.

An extensive pretensioning plant has been installed, and improved techniques have been developed including means of deflecting strands for pretensioning heavy bridge girders.

The Gerwick plant has a variety of pretensioning beds. Heavy bridge girders are cast on four beds, each 100 ft long.

With these facilities alone, 6 heavy girders can be cast in a week on an 8 hr day, 5 day week basis.

An additional 3 line, 340 ft long bed can be used for large piles or heavy bridge girders. One 4 line, 500 ft bed, another 4 line, 400 ft bed, and an additional 100 ft bed are all usable for piles or for light bridge and building members.

The Basalt Rock Co., Inc., casting plant, located at Napa, Calif., has prestressing facilities housed in a 65 by 1,000 ft building which permits all-weather casting. The structure is serviced by two 30 ton bridge cranes. At present Basalt is set up to cast 7 post-tensioned bridge girders a day plus 900

Building, U. S. A.

JUST OUT! In this book the editors of **Architectural Forum** give you a close and revealing look at the men and methods responsible for building in the United States: the **real estate operator**, the **lender**, the **contractor**, the **labor force**, the **manufacturer**, the **architect**, and the **engineer**. An expert's view of our gigantic building process, how it works, and what its future may be in terms of a fine architecture and a beautiful America. **147 pp., 41 illust., $3.95.**

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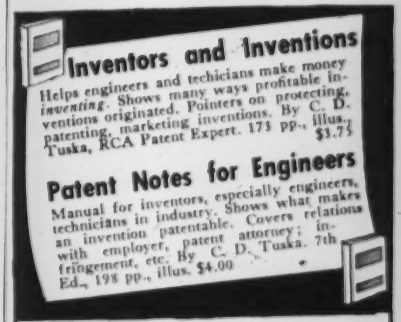
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lin ft a week of pretensioned bridge members. And should the need arise, these facilities can be expanded.

Basalt Rock started in the aggregate business in 1924. Several years before World War II the company began concrete block manufacturing. And starting in 1947, Basalt offered precast prestressed building elements. Some of these structures showed remarkable resistence to atomic blasts in tests at the AEC Nevada Proving Grounds in 1955 (ENR May 12, 1955, p. 21). Thus, the Basalt facilities were well established before the State of California started prestressed bridge design. And Basalt was capable of taking advantage of the situation.

Girders Roll Onto Piers From Pile Bents

One of the major advantages of prestressed precast bridge girders is that no falsework is required. Thus, the units can be installed quickly over heavily traveled traffic arteries. And they can also be installed over flowing streams.

Simplest method of installation is by lifting the girder units from ground or truck-bed level by means of heavy cranes. However, that is not always possible.

An ingenious method of placing prestressed girders without using the stream bed was developed by Ben C. Gerwick, Inc., for a bridge across the Yuba River near Marysville, Calif. It centers around a pair of 36 in., 170 I-beams supported on temporary bents. The I-beams serve as trolley rails for rolling the girders into position.

The bridge—called the Simpson Lane Bridge—replaces an outdated structure that was washed out by the December, 1955, California floods. It is actually on a county road system, but because state and federal emergency relief funds are involved, it was designed by the California State Highway Department. The road handles some 2,000 cars a day between Marysville and Beale Air Force Base.

The bridge has five 80 ft spans, each including 6 T-girders. The prestressed units were designed prior to the establishment of California Bridge Department standards.

Depth is 3 ft 10 in. instead of some multiple of 6 in. Width of the T-flange is 4 ft 2 in. instead of the now-standard 3 ft 6 in.

The Gerwick organization, which is both general contractor and girder fabricator for this job, chose to prestress the units with 49 ⅜ in. nominal diameter 7 wire strands. Pretensioning was used with 21 of the strands deflected to approximate a parabolic shape using a method developed by the Gerwick people.

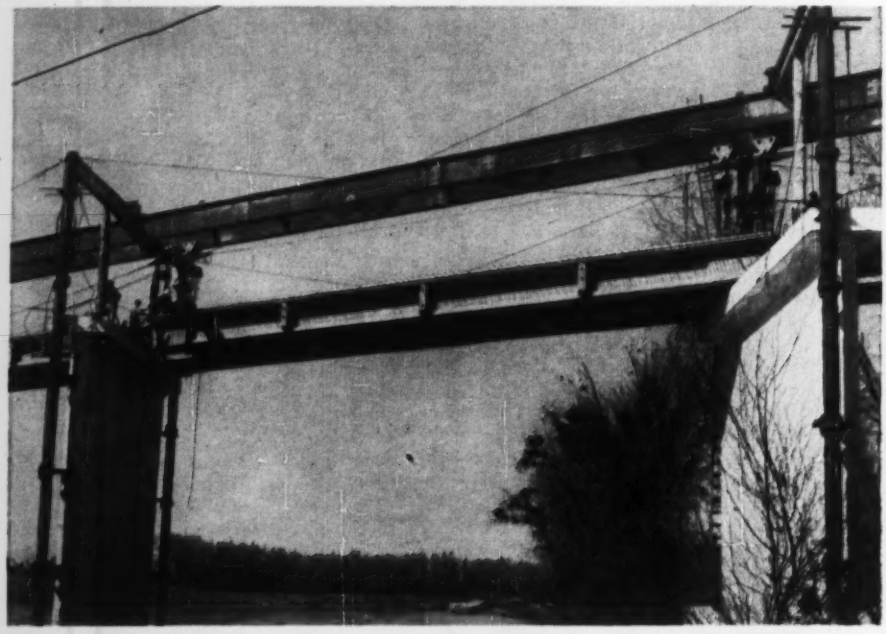
Deflecting the strands involves heavy steel tie-down brackets that are cast into the girder. The parabolic shape has the advantage of greater prestress effort with fewer strands.

Bridge piers were constructed during dry weather when the Yuba River is generally merely a trickle. But girders were placed during late winter and early spring when the river could flood on very short notice.

Thus a placing method not involving crane lifts from the river bed was desired.

The 36 in. I-beams are supported on bents composed of 12 in. pipe based on temporary piles and 15 in. double I-beams as the horizontal members. Since center-to-center of bearing of the I-beams is 43 ft, intermediate support was needed. Timber posts resting on the pier top performed this function.

Bottom flange of the 36 in. I-beams serve as trolley rails. Two such beams were used to permit lacing between



PRESTRESSED T-GIRDER is lowered onto bridge piers after being trolleyed into position. The 37½ ton concrete member is suspended by four 10 ton chain falls from a 36 in. 170 lb I-beam.

PRETENSIONING CABLES are deflected to approximate parabolic shape. The 3 ft 10 in. deep, 80 ft span units include 21 deflected strands and 28 straight strands with strands being ⅜ in. dia, 7 wire cables.

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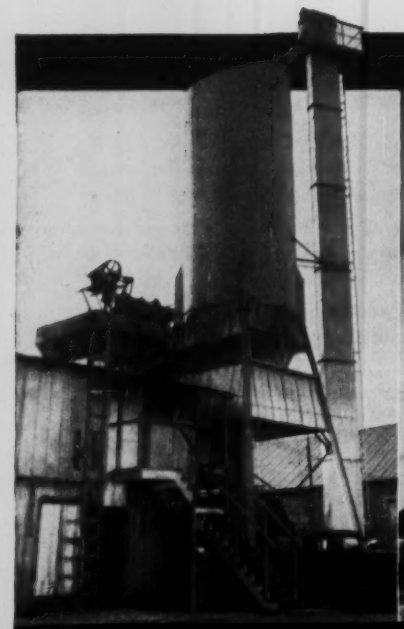

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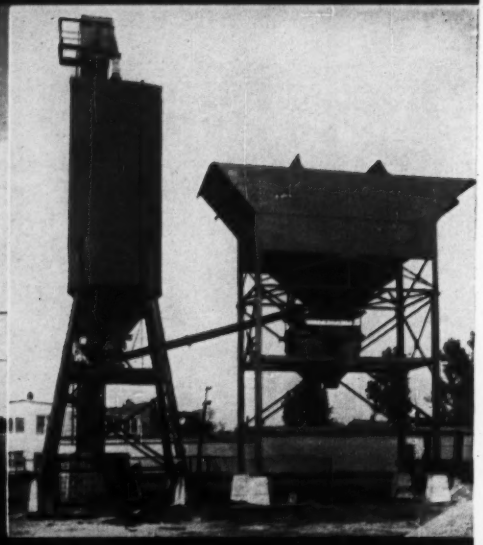

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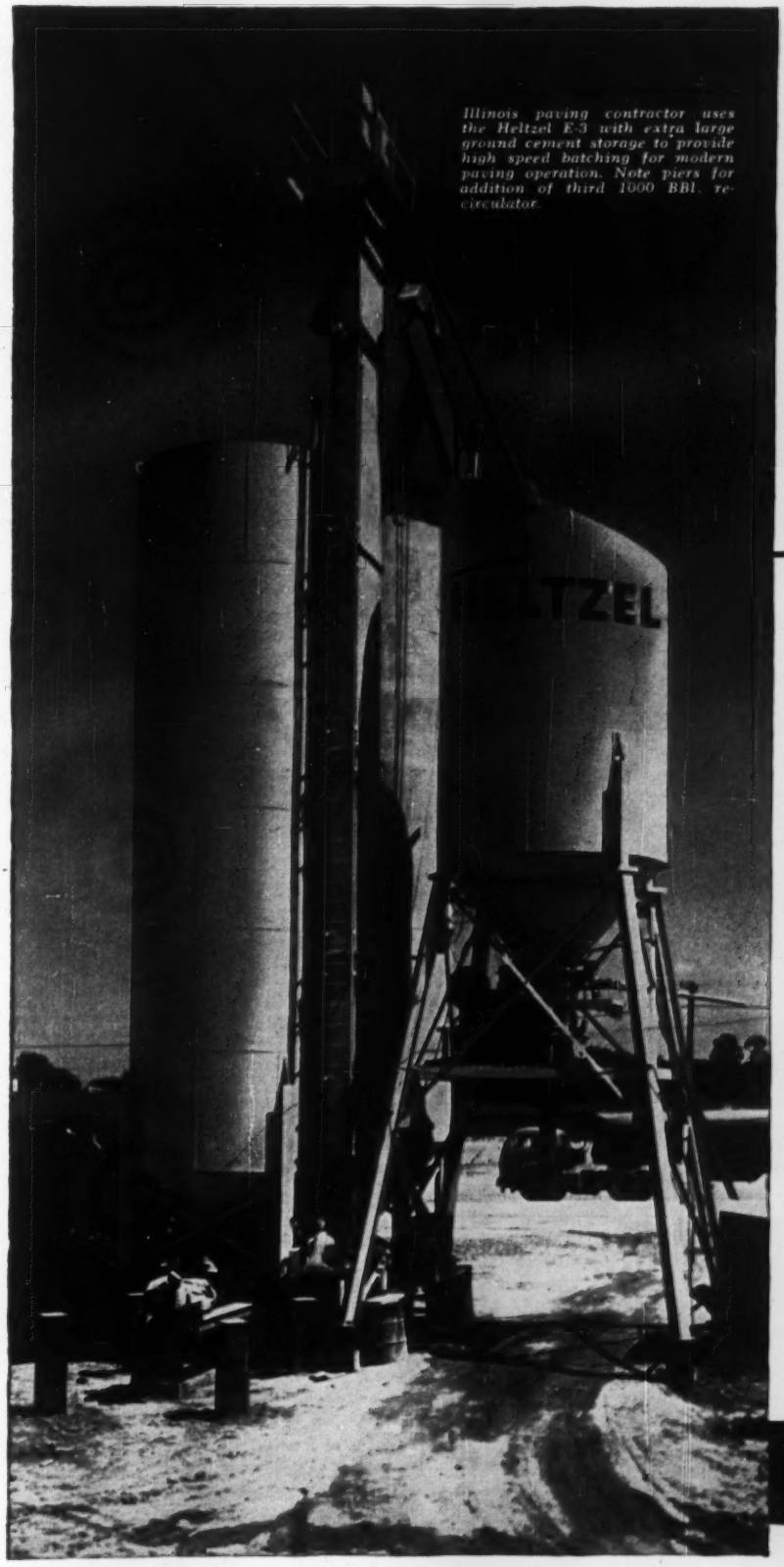

Illinois paving contractor uses the Heltzel E-3 with extra large ground cement storage to provide high speed batching for modern paving operation. Note piers for addition of third 1000 BBl. recirculator.

Ohio paving contractor selected this E-3 with recirculator after comparing with several other makes. He reports the plant is most versatile, fast and exceedingly accurate.

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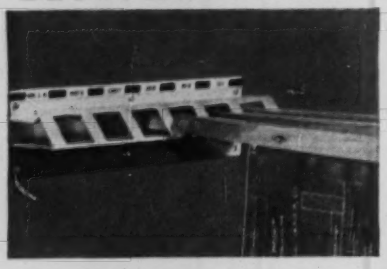

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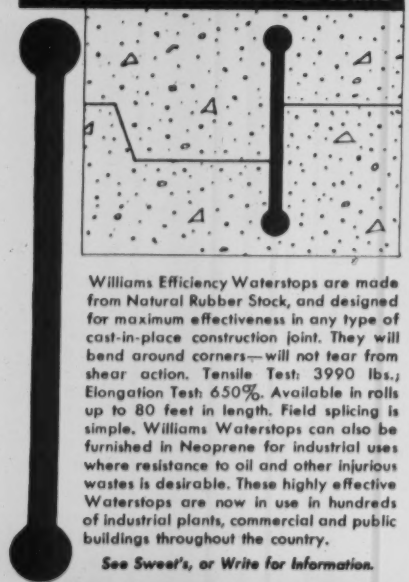

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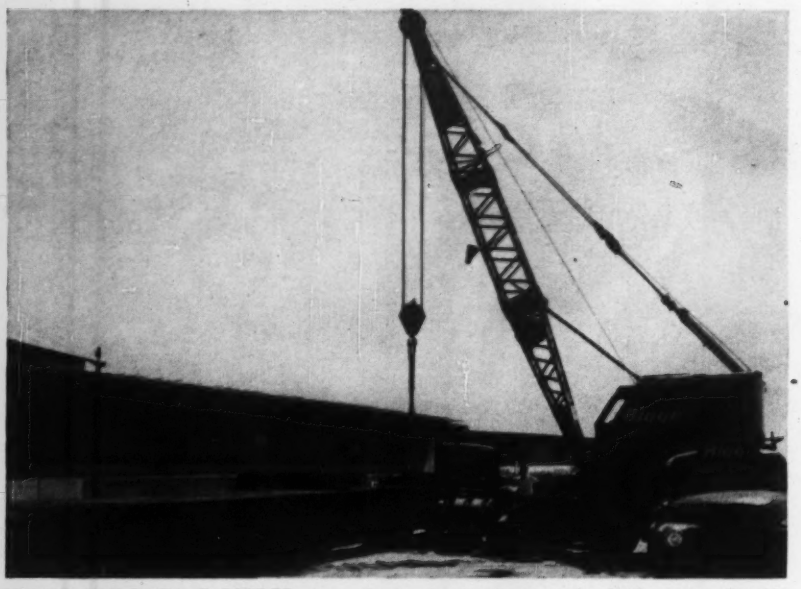
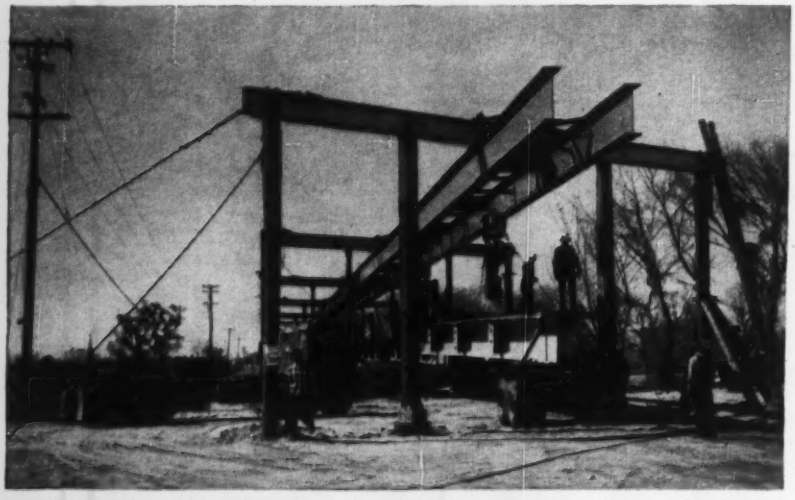
. . . Chain falls handled girders at site



CRANE UNLOADS T-GIRDER from flatcar for hauling to the bridge site. Double sets of flatcars were needed to haul the 30 girders to an unloading point 2 miles from the bridge site.



GIRDERS ARE UNLOADED from truck trailer units by trolley-supported chain falls. Double I-beam support for trolleys give added stiffness and minimize moves.

them for lateral support. And spacing was such that two rows of prestressed girders could be positioned from each of three settings of the heavy beams.

Girders were rail-hauled to within two miles of the job where they were unloaded by a single truck crane. The crane would pick up one end of the girder and place it on a truck-type tractor unit. Then the crane would pick up the other end of the heavy prestressed member and place it on a set of trailer wheels.

At the bridge site the truck-trailer would run under the heavy I-beams where the girder was picked up by sets of chain falls. Two 10 ton units lifted each end of the girder. A heavy winch positioned at the other end of the bridge then hauled the girder units to proper position. They were then lowered onto dowels inserted in the piers.

The trolley placing system was worked out by William Talbot, chief engineer of Ben C. Gerwick, Inc. Harry Larson was project manager. The work was under the cognizance of Alvin M. Finch, Yuba County Road Commissioner.

Walter Ralphs was resident engineer for Yuba County.

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Prestressed Girders Cast on California Bridge Site

Most precast, prestressed girders for California bridges are made in a factory production operation. On one recent job, however, the contractor—W. F. Maxwell Co.—elected to cast the 184 T-girders at the job site.

There are several reasons why such a choice was made. One is that there were enough girders involved to justify establishment of on-site casting facilities. Another is that the bridge is situated in a relatively isolated location across the Santa Clara River at Saticoy, Calif., some 70 miles north of Los Angeles. And Southern California prestressed casting yards have not yet engaged in extensive bridge girder work.

Design of the T-girders is different from that of most other California girders. Site conditions and the fact that the bridge is replacing an existing structure required spans of 71 ft and limited girder depth to 3 ft. Thus, the T-girders were made 3 ft deep, and a 38 in. top flange was specified.

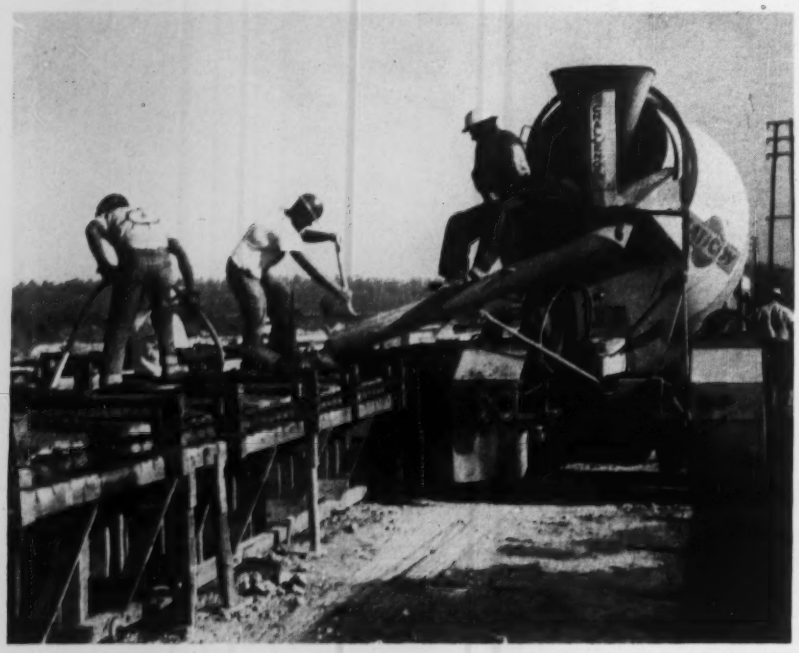
The girders were not moved from the casting bed until time for erection. Several times during the job truck cranes came in and walked the completed girders onto the bridge piers.

The Maxwell casting facilities consisted of 48 concrete pads and six sets of forms. Each form was reused about 30 times. The forms were faced with glazed plywood, sprayed before each use with tilt-up parting compound.

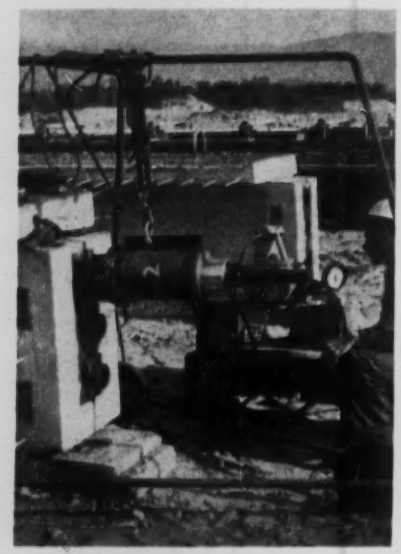
Production schedule called for completion of two girders a day. This meant that each set of forms was involved in pouring operations one day, stripping operations a second day, and forming operations a third day.

One unusual feature of the design is that the girder system was designed to be continuous under live load for three spans. To achieve continuity, the top flange for 8 ft adjacent to a pier was omitted from the girders as cast. The flanges in these areas were cast in place, with continuity assured by mild steel in the slab over the piers and by stirrups protruding from the web of the girder. This design is the first California prestressed bridge that acts as simple spans under dead load and as continuous spans under live load.

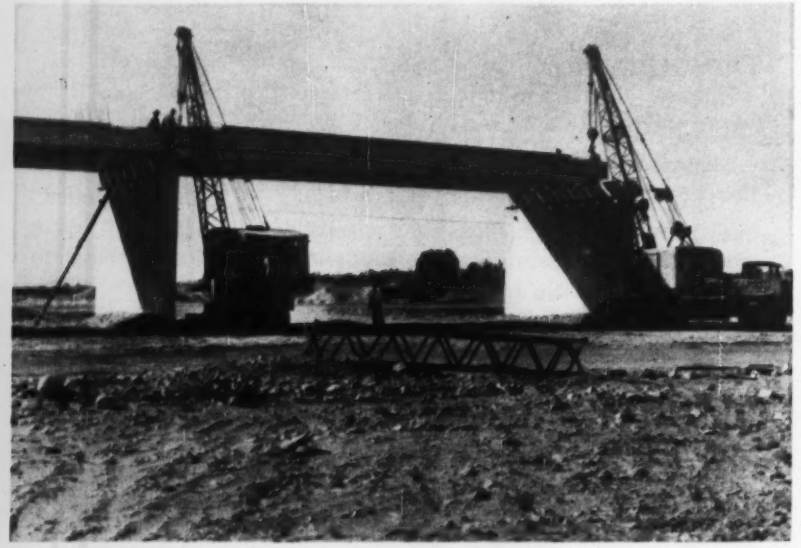
Contract for the Santa Clara River Bridge of $604,000 was held by W. F. Maxwell Co. of Fontana, Calif. The work was organized by H. B. Rann, engineer for Maxwell, with Truman Hart serving as general superintendent. H. E. Harger was resident engineer for the California Division of Highways.



GIRDERS ARE CAST at a jobsite casting yard for a prestressed bridge in California. Most girders for California prestressed bridges are cast in a central prestressing yard.



GIRDERS ARE STRESSED on site with job made frame supporting the apparatus.



GIRDERS ARE HOISTED onto the bridge pier by a pair of truck cranes. Each 71 ft span included 8 T-girders.

Tru-Stop Brakes

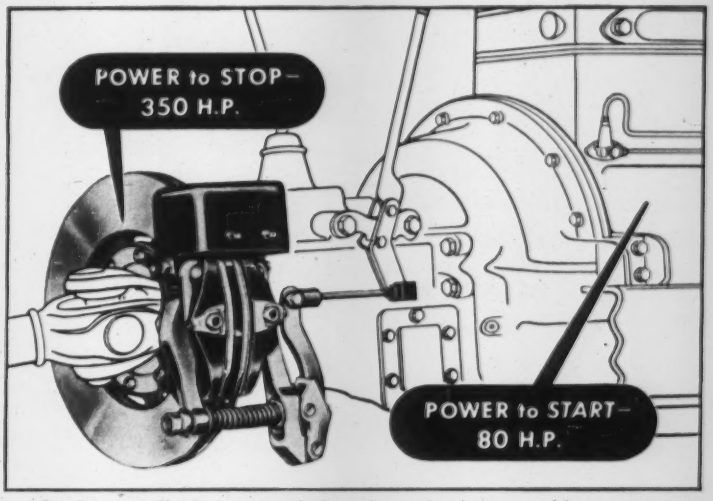
Meet Every Heavy-Duty Safety Requirement

OFFER POSITIVE PROTECTION AGAINST RUNAWAY OR PARKING ACCIDENTS—AT LOWEST COST

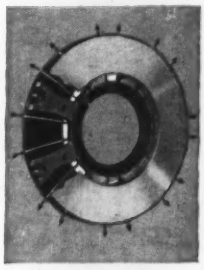
HERE IS WHY:

They have surplus power required for emergency service—no dangerous self-energizing

TRU-STOP Heavy-Duty Emergency Brakes are not only excellent parking brakes. They serve as a complete, independent and fully reliable braking system. Operating on the propeller shaft they enable the driver to continue on safely in the event of service brake failure. TRU-STOP brakes have the surplus braking capacity to be used *repeatedly* as an auxiliary to service brakes.

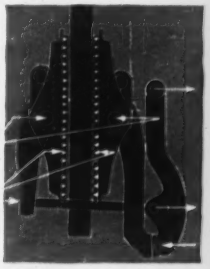


Brakes actually do more work than the engine in terms of horsepower Where it takes 80 HP to accelerate to 20 miles per hour, it takes 350 HP to make a safe stop from 20 miles per hour within required limits



Ventilated to throw off heat

Brake efficiency depends on ability to throw off intense heat —rapidly. Discs of TRU-STOP brakes are exposed to the air even during the braking operation. Ventilated design circulates air *between* the disc plates.

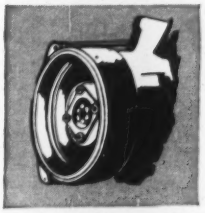


Give uniform brake pressure

Disc of TRU-STOP brakes is "squeezed" between the flat surface of the shoes. Effort applied to brake lever operates front and rear lever arms simultaneously. Pressure is exerted on the center of each shoe. Entire lining surface is in contact.

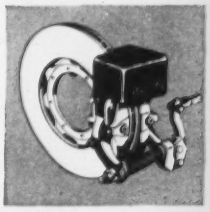
TRU-STOP HEAVY DUTY BRAKES OUTPERFORM AND OUTLAST DRUM-TYPE BRAKES

DON'T LET THE SURFACE AREA FOOL YOU!



Drum-type brake

43¼ square inches of lining. Lining covers 310 degrees of the drum. *BUT* only 50 degrees of the lining-covered drum is exposed to the air.



Tru-Stop brake

28 square inches of lining. 90 degrees of the disc under pressure. *BUT* 270 degrees of the disc is exposed to air. Directing and throwing off heat is basis of brake efficiency.

THE TEST

Drum-type Brake vs *Tru-Stop Brake*	
After a few light and two heavy applications from 20 MPH, lining was useless for further test.	Repeatedly stopped vehicle from 50 MPH —was then used to decelerate on steep grades. No serious damage to lining.

We will be glad to answer any questions or give you more detailed information about TRU-STOP Heavy Duty Emergency Brakes. Send for

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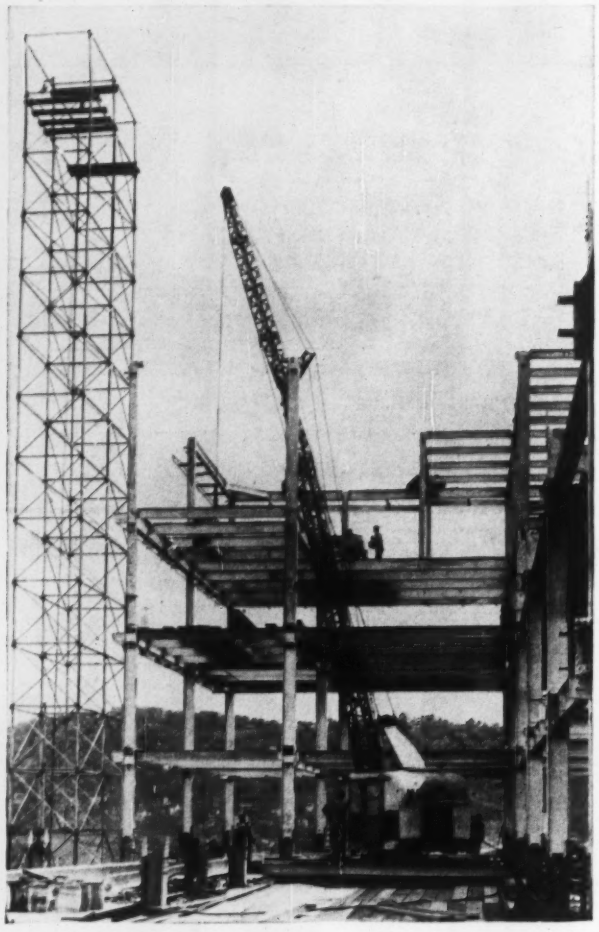
ACCO

Truck crane, mounted and lifted on supporting platform, moves on rails to place steel in far corners of buildings in Pittsburgh.



Crane erects a 2 story tier of columns and two levels of floor beams from each working level. Crane and platform are lifted two floors at a time by chain blocks hung from temporary column extensions (arrow, extreme right). All field connections of the frame are bolted.

Truck Crane Mounted on Rails

Eugene P. Cassin
District Engineer
American Institute of Steel Construction
Pittsburgh, Pa.

A novel method was used in the erection of the steel frame for the 604 Forbes St. Office Building in downtown Pittsburgh. A truck crane, mounted on rails and raised with the building, was used to erect the steel instead of the conventional guy derrick.

The steel building frame, 53 ft wide, 180 ft long and 10 stories high, was considered to be too long and the floor construction too light for the use of one guy derrick with sufficient length of boom to reach the far corners. Using two lighter derricks and their crews would have been too expensive.

The erectors chose a standard 7½ ton truck crane with a 50 ft main boom and a 15 ft extension jib to do the lifting and placing of the structural members.

The crane superstructure, complete with geared turning base, was mounted on a supporting steel-framed platform about 22 x 20 ft in plan. The platform was equipped with four double-flanged wheels, one under each corner, and four telescoping outrigger beams also located at each corner. A 10 ton screw jack was welded to the outboard end of each outrigger.

The idea was to lift the crane and platform on chain blocks attached to already placed columns. The crane rolled on rails set at each working level so that the boom could reach the outermost parts of the frame.

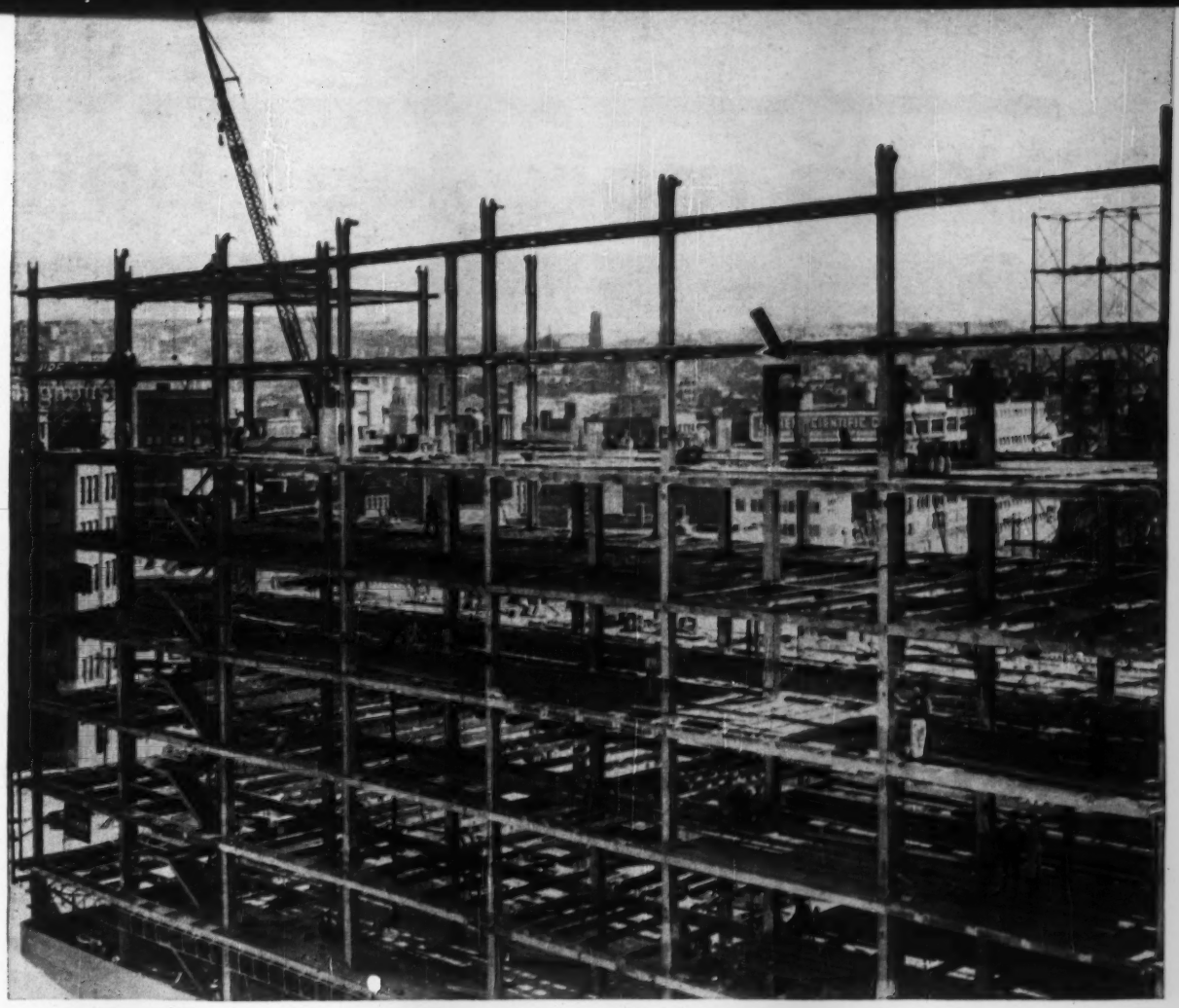
The entire assembly was set up in the erector's shops and tested under actual working conditions before being used on the job.

At the start of erection, a second truck crane, which was to unload and handle steel at the site, was used to erect two bays of columns and beams. It then set the traveling crane in place on the second floor. From this point the special rig took over and continued the erection.

Temporary rails were placed in the center bay of the building. The crane traveled on these rails, moving back and forth, setting beams and columns from one end of the building to the other. A runner line from an engine-driven spool on the crane powered it.

When heavy lifts were made, the telescoping outriggers on the ends of the frame were set directly over the floor girders and the jacks were adjusted for bearing. Cables of adjustable length, complete with shackles and pins for easy and rapid installation, tied down the crane frame when necessary.

Following erection of a 2-story tier



Erects Long Steel Building Frame

of columns and two floors of beams and girders, the rig was hoisted to the next working level. Hoisting was done by four 6 ton spur-geared chain blocks. The chain blocks were suspended from 6 ft column extensions on the tops of four building columns in any one panel of the center bay. The extensions were shop fabricated to connect to any column splice and had short beam brackets welded to the top. The chain blocks were hung from these brackets.

Two men on each of the four chain blocks operated the hand chains to hoist the rig two floors. The time required for the move was about two hours.

After the traveling crane had been hoisted to the next working tier, a set of falls attached to the crane frame completed erection of the two levels of floor beams in the jumping well. Two lengths of rail, initially placed in the new working level before jumping, were then slipped over on the floor beams and the crane then was dropped onto the rails in operating position.

When frame erection was completed the crane and supporting platform were dismantled for convenient lifts and lowered to the ground with a jinny wink.

The building was designed with cellular steel floors, aluminum curtain walls and lightweight plaster fire protection. Weight of the steel frame is low for the size of the building, and there were many pieces to erect in proportion to the total tonnage. Nevertheless, erection was completed in 40 working days.

It was estimated by the erector that the steel was erected twice as fast with the traveling crane, which set an average of 135 pieces a day, than could have been accomplished a guy derrick setting an estimated 40 to 60 pieces a day.

• **Erection advantages**—All movements of the crane were under control and in full view of the crane operator. This eliminated time-consuming use of signal bells to an engineer in the basement, and booming up and down to clear guy cables. No manual turning was needed as required with a guy derrick. Speedier and more accurate handling of loads was possible, with the erecting foreman, crane operator and all workmen in full view of each other.

The Manor Real Estate Co., a subsidiary of Pennsylvania Railroad Co., is the owner of the building. Architect and engineer is Wyatt C. Hedrick of Ft. Worth. H. C. Beck Co., Atlanta, is the general contractor. Minnotte Brothers, of Pittsburgh, were steel erectors.

Steel was fabricated by the Levinson Steel Co., Pittsburgh.

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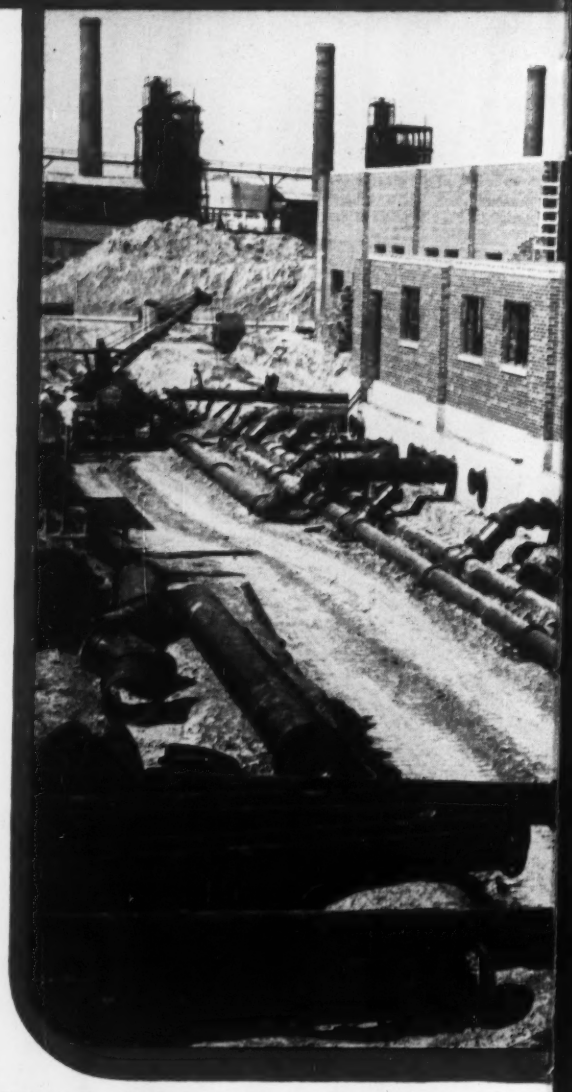

Robinson, Ill.—Mechanical Joint cast iron pipe being installed at Ohio Oil Company Refinery.

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SERVES FOR CENTURIES...

Philadelphia

Incinerator Program:

From a token 600-ton-per-day capacity in 1952 . . .

1 new plant added
1 renovated
2 expanded

. . . to a 1,950-ton-per-day capacity in 1957 . . .

1 ready in 1959
3 more by 1964
1 last one by 1970

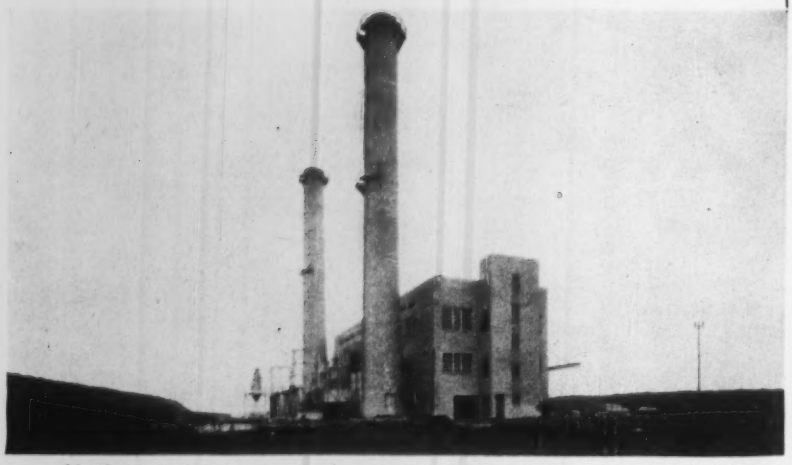
For 1970 final capacity of 4,950 tons daily

The City of Philadelphia, stirred out of a torpor that had been stifling its growth, has been striding briskly ahead for the last five or six years to make itself a living, vital metropolis. All the sounds and sights of a growing and changing city are present: destruction and construction – buildings coming down, others going up, bridges being built, streets being ripped up, then remade.

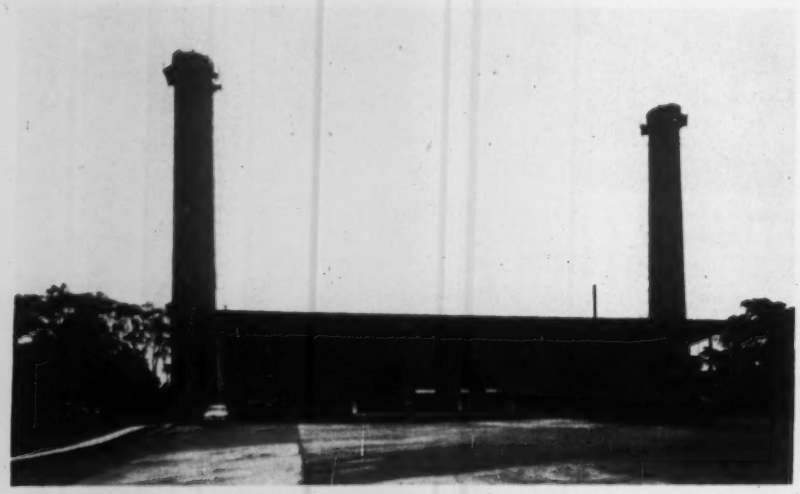
And Philadelphia is not neglecting its behind-the-scenes facilities – those upon which a city depends for efficient functioning. One such area is incinerators for refuse disposal. A modern city rightly frowns upon open refuse burning, and Philadelphia's comprehensive incinerator program is expected soon to do away with that nuisance activity.

From a token capacity of 600 tons daily in 1952, Philadelphia incinerators today can handle 1,950 tons per day. Add to that, a 600 ton plant expected to be in operation in 1959, three more of 600 tons each by 1964, and a final 600 tonner envisioned between 1964 and 1970. Total capacity will then stand at 4,950 tons–sufficient to meet anticipated top demand.

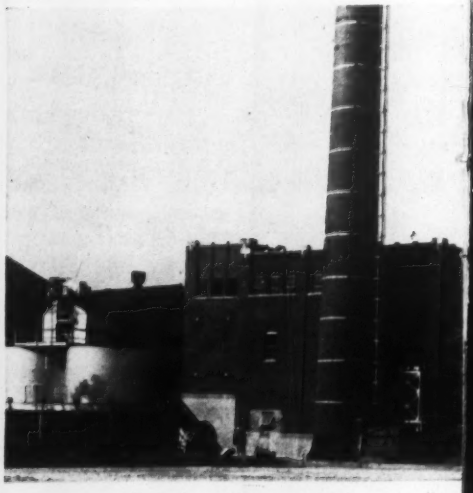
The Philadelphia plan is split into two phases–a rough cost figure for all incinerator work is put at $22 million. Phase I–at $10 million–is to provide incinerator capacity to handle material in the amounts collected in 1952. It should have been completed by now except for a legal setback met at one new incinerator site. Phase II–at $12 million–goes to 1970 and is expected to take care of increased demand arising from population growth and increased



NEW Northeast incinerator went into operation last year with a capacity of 600 tons per day. Flyash eliminators are featured at all Philadelphia incinerators.



RENOVATED Harrowgate plant has only shell of original building remaining after complete remake finished in 1954 increased its 100 ton capacity to 300.



EXPANDED Bartram facility went from 200 ton capacity to 450 tons

Keeps Building to Stop Open Burning

per capita production. With physical limitations on such growth, the 1970 capacity should be good for years beyond that date.

• **Advances**—One aspect of its incinerator program that the Sanitation Division of the Department of Streets—the responsible city agency—takes satisfaction in is the installation of flyash eliminators in its four present incinerators. Philadelphia now has in effect tight air pollution control measures, which are expected to become more stringent still. Regulations read that stack emission may not exceed 0.85 lb flyash per 1,000 lb of gas corrected to 12% CO_2. This figure is met and bettered by water spray gas scrubbers that keep emission at about 0.6 lb.

The department is also being progressive in incinerator design. For example, the 1959 incinerator—first designed in 1952—is being redesigned to make use of what has been learned both from the incinerators in Philadelphia and other cities.

New design for the 1959 incinerator is not yet set, but specifications being discussed with Day & Zimmerman, Philadelphia consulting engineers, are a marked departure from the city's present incinerators. Current thinking is along the lines of an end-loading furnace with inclined and horizontal traveling-grate stokers. Thus, space will be saved, making it possible to have the main furnace large enough to handle the combustion step and do away with a separate combustion chamber.

A mechanical or electrostatic flyash collector is planned, with a water spray chamber between furnace and collector to knock temperatures down from 2,000 F to the 800 F at which the collector can operate.

Another idea being considered is the elimination of ash tunnels. The residue would be emptied instead into a container in such a way that the important air seal for the furnace would remain intact. Material would be dumped dry, without quenching, into containers which would be set aside to cool. Trucks would then cart away three or four of these containers. Releasing the residue to wire type containers set in troughs of water for cooling is another possibility being examined.

• **Phase I**—The first part of the program includes expansion of two existing incinerators, renovating another, and building two completely new ones—for a total capacity of 2,550 tons. Nichols Monohearth furnaces with rotary stokers are used in all incinerators.

Northeast incinerator is the city's new unit. It cost $2.5 million—engineering fees are included in all figures—and went into operation in April, 1956. The 600 ton capacity of this plant is made up of four 150 ton furnaces. Water spray flyash eliminators complete the plant. The incinerator uses waste gas from neighboring Northeast Sewage Treatment Plant to heat the building and supply auxiliary heat to the furnaces, although it is seldom necessary to do the latter. Operating costs are $1.60 a ton, a low figure for incinerators.

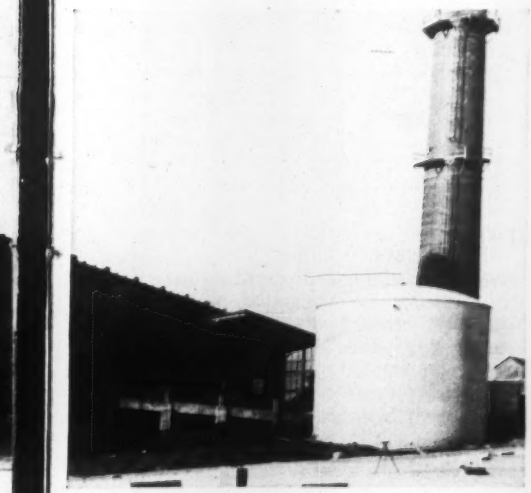
Harrowgate—which has a small garbage reduction unit, one of the few left in the country—was a complete renovation. All the insides of the 100 ton plant, which was built in the early 1920's, were ripped out leaving only the shell of the building. Converted from a floor dump to a bin and crane type plant, two 150 ton furnaces now make Harrowgate a 300 ton capacity incinerator. Water spray gas eliminators round out the renovation, which was finished in late 1954. The plant also utilizes steam produced from waste heat. Cost of Harrowgate, plus expansion of the Bartram incinerator (below) ran to $3.1 million.

Bartram's first unit was built in the mid-20's and contained two 100 ton furnaces. Expansion consisted in adding two 125 ton furnaces to bring total capacity up to 450 tons by the spring of 1955. Water spray flyash eliminators also have been installed.

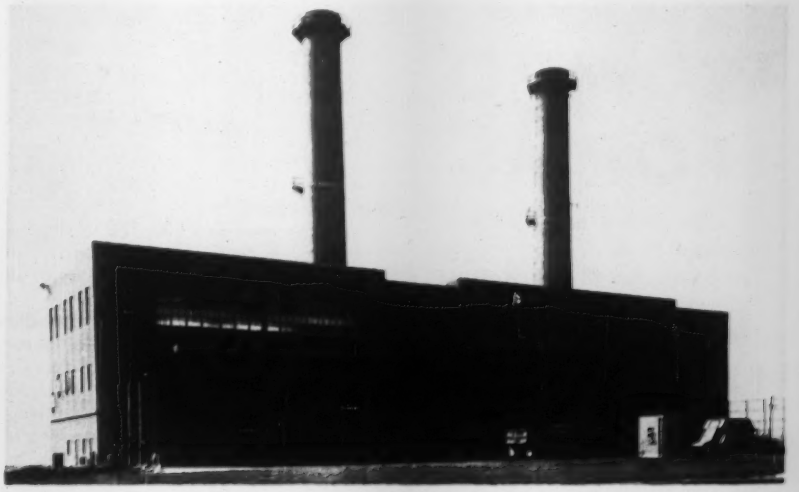
Whereas all the other Philadelphia incinerators have ash tunnels for carting away residue, Bartram uses a drag conveyor that pulls the ashes up to a hopper storage container—a system that has caused quite a bit of trouble due to conveyor maintenance.

The plant has a conventional crane bucket that can service all furnaces. In addition, a grapple bucket with large tines has been installed for use late in the day when the refuse in the bins has become compacted. The large-tine bucket works so well that plans are to add one to all the city's incinerators.

Southeast incinerator is another expansion job. The original building of 1950 holds three 100 ton furnaces. Two 150 ton furnaces were added and in operation by the fall of 1955. Water



in 1955 when new wing was added to make it a four furnace installation.



EXPANDED Southeast incinerator was also built out to increase capacity from 300 to 600 tons in 1955. Two new furnaces were added to the original three.

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R. B. Barkley, President, Sanford Construction Co., Sanford, N. C.

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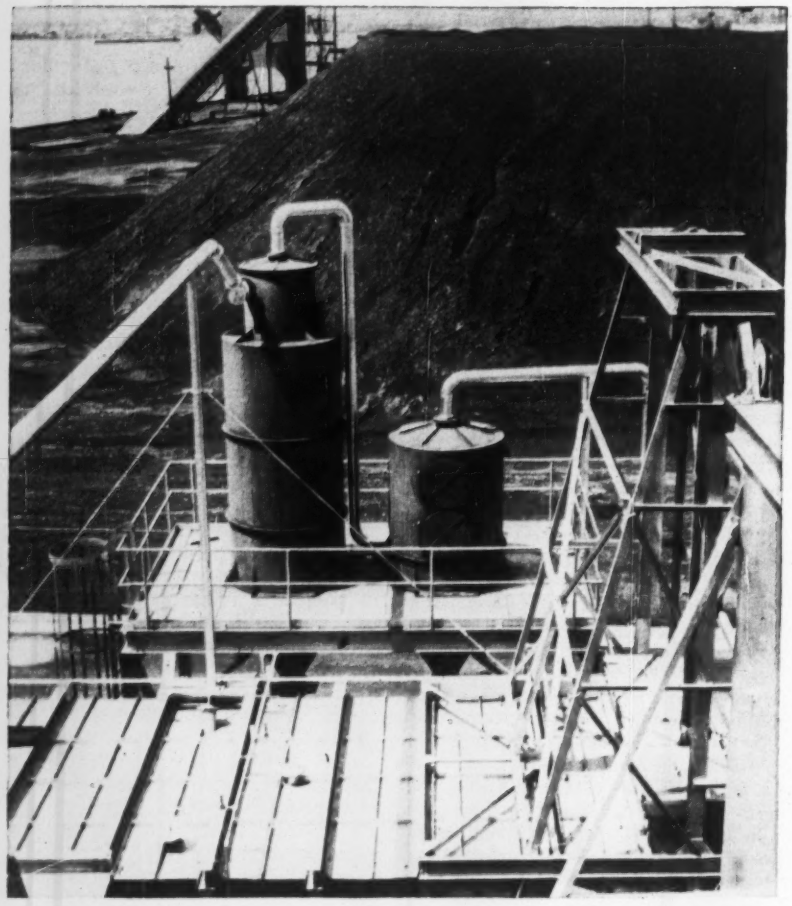
. . . Problems in incinerator location



FLYASH ELIMINATORS of the water spray gas scrubber type were installed in all existing incinerators. This is one of two at the new Northeast plant.

spray gas scrubbers are also included. Cost for Southeast was $1.5 million.

Northwest incinerator is a 600 ton plant that should have been built by 1955 but because of legal delays won't be ready until 1959. It, and probably all future plants, will feature two 300 ton furnaces. Cost is estimated at approximately $3 million.

• **Phase II**—As mentioned before, the second part of the city's incinerator program goes to 1970. However, since capital funds are being used to finance the program, firm plans run only through the next five years.

Listed for those five years—for appropriation of funds—are three incinerators of 600 tons each, at a tentative estimated cost of $3 million apiece. They are expected to go into operation in 1960, 1962, 1964. Then between 1964 and 1970 the final one planned, also at 600 tons and $3 million, will reach the program's planned ultimate capacity—4,950 tons daily.

• **Flyash and ashes**—The delay in building the Northwest incinerator resulted when residents in the site area obtained an injunction against its construction. They cited zoning restrictions and declared that the installation would be a nuisance. The zoning irregularities were cleared up by the city. As to the nuisance aspect, the court stated that an incinerator per se could not be considered a nuisance until it proved to be one in operation. This formally affirms the city's right to place incinerators wherever it thinks necessary — a handy ruling for future installations.

The effect of incinerators on an area has been studied by the streets department. Franklin Institute of Philadelphia was retained to make an evaluation of flyash present within a radius of one mile both before and after incinerator operation. Although more pre-incinerator sampling would have been desirable, still indications were that there is no apparent change in the amount of flyash trapped in the neighborhood

Precast...

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But speed and economy are not all the benefits derived from BASALT precast construction. For inherent characteristics of BASALITE lightweight expanded shale concrete insure top strength, rugged durability, and creative freedom. Factory production methods reduce on-the-job costs . . . result in fewer lost hours due to stoppages.

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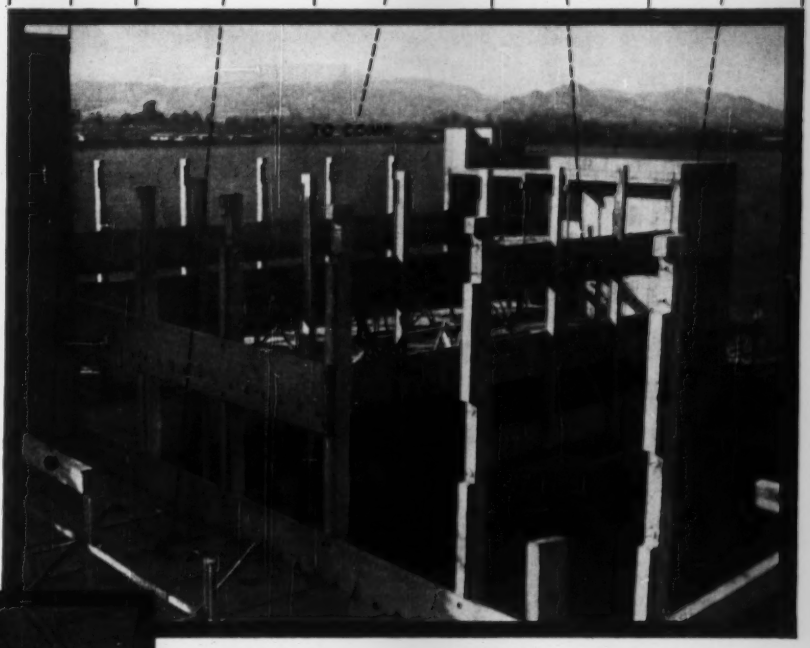
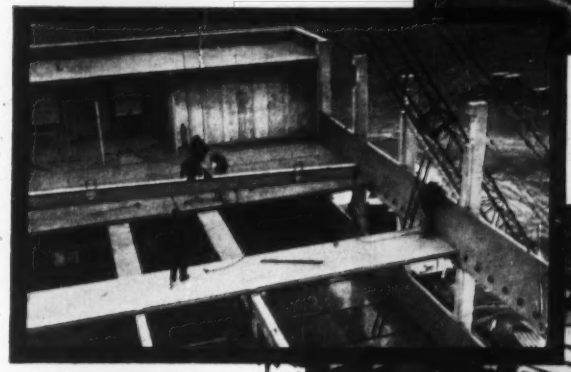
Beams	Floor slabs *	Roof slabs *	Spandrel panels	Columns





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STRUCTURAL ENGINEER:
John J. Driskell, San Gabriel, California
CONSULTING ENGINEERS:
J. F. Reardon & Associates, Reseda, California
CONTRACTOR:
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* Prestressed concrete components. Floor slabs are continuous design 4 in. thick, 40 ft. long prestressed lightweight sections.

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- Good mortar workability is a necessary aid to masons in producing serviceable, watertight masonry walls.
- Field results consistently confirm that Atlas Mortar Cement produces excellent mortar workability and also gives high yields.
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ROTARY GRATE of one of the furnaces used in present incinerators.

of the incinerator with spray chambers in operation.

What to do with the residue from refuse burning is also under study by the department. The cost for necessary facilities to barge it along the Delaware River for disposal in marshlands has been set at about $12 million by the firm of Metcalf & Eddy. However, there is enough fill space within the city limits to last for at least five years and probably ten. In the meantime, other methods of disposal will be explored.

The Department of Streets is under Commissioner David M. Smallwood, deputy commissioner is William W. Griffin. Chief engineer of the sanitation division is Abraham Michaels.

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Low Cost Housing

Canal Zone may be area for union's investment

A large U.S. labor union may initiate a low-cost housing program in Panama aimed at increasing union membership among Panama Canal employees and improving housing conditions currently described as "deplorable."

The program, one that could set a pattern in Latin America, would be sponsored by the American Federation of State, County and Municipal Employees, AFL-CIO. Arnold Zander, AFSCME president, was in Panama this month to look over the proposal made to him by a prefabricated housing manufacturer.

An American-financed Panamanian company, Trans-American International Industries, will start manufacturing houses this year in Panama's Colon Free Trade Zone.

Headed by Richard Finke of Westbury, Long Island, the company expects to assemble the prefabricated units in the Free Zone and export them, tax free, to Latin American and other world markets.

• **Amount of Investment**—If the union goes through with the plan, it will invest between $4 million and $5 million in Panama to provide modern, tropical housing for its members. The houses will sell for $3,500 to $4,000 for a two bedroom units, including land. The houses will be financed by the union for a 15 year period.

During his stay in Panama, Mr. Zander discussed the idea with Panama's president Ernesto de la Guardia, Panama Canal Co.'s Governor W. E. Potter and Julian F. Harrington, the U. S. ambassador to Panama. All gave their blessing to the idea.

It would be the first time an American labor union invested in this type of program outside the United States.

• **Sub-standard housing**—Housing conditions of Zone employes living in the Republic are considered by observers as "disgraceful," with crowded slums being the rule rather than the exception.

Many of the properties, dating from the last century when the French initiated canal efforts, are owned by Panama's wealthy ruling class. These families are unwilling to raze the slum housing and invest in new construction.

President de la Guardia's promise of a low cost housing program for Panama prior to his election has not been kept due to lack of funds. The labor union's plan may be the answer to the housing problem.

It also may be the answer to the hopes of the prefabricated housing company. Mr. Finke hopes to have a Panama model development of low cost housing, which would involve a $35 million investment for Panama; the union program could be the needed boost.

• **Insurance firms interested**—Some U. S. insurance companies have shown an interest in the plan and one company, Mortgage Title Insurance Co., reportedly had a representative in the country studying the program.

Although details are not complete, low cost housing for Panamanian non-canal Zone workers probably would involve mortgage financing by U. S. investors, with the loans guaranteed by the Panamanian government.

West Germany Ranks Third In Production of Cement

West Germany's cement industry last year produced 19.6 million tons in its 90 plants, thus ranking third in the world's cement production. The United States ranked first with 53.3 million tons and Russia second with 24.9 million tons.

West Germany's production was valued at $245.8 million. This figure is an all time high for the nation's cement industry.

East Germany, which started production in 1955, produced 3.6 million tons of cement in 1956. Total production of 23.2 million tons in all of Germany compares to the 16.1 million tons it produced in 1938.

Cement exports from West Germany, however, decreased in 1956 and are expected to slump further because former underdeveloped countries now are building their own cement industries.

Ethiopia to Call Bids For Blue Nile Survey

The Ethiopian government has announced in Addis Ababa that it will call bids internationally for a complete aerial survey of the Blue Nile Basin, one of the sources of the Nile River. The survey will cover 115,000 sq mi and cost an estimated $1 million.

Also, Ethiopia recently informed Egypt and the Sudan that any discussion of the future of the Nile River waters should include Ethiopia.

World's Largest Hydro

Interest heightens in Inga Falls site on Congo

A hydro plant with a capacity equal to the combined capacity of all the hydro power developments in the United States sounds like a fantastic dream, yet the possibilities of such an installation on the Congo River in Africa are being seriously studied by the Belgian government. Moreover, a world consortium of aluminum interests has just been announced to investigate the establishment of aluminum reduction works in the area on the chance that power will be developed.

The site is on the lower Congo at a place called Inga Falls, located between the port of Matadi and Leopoldville. Here the river, with a constant flow of something on the order of a million cu ft per sec, makes an 18 mile loop, the ends of the loop being less than a mile apart and having a 300 ft difference in elevation. It is estimated that a hydro plant located at this point could be developed to a capacity of 25 million kilowatts.

The project is said to have been proposed first three or four years ago by Aluminum Ltd. of Canada, Union Carbide and Carbon Co. and the Monsanto Chemical Co. The interest thus generated resulted in the Belgian government, about a year ago, asking four engineering groups to report on the technical and economic aspects of the project. These groups were the Syndicat d'Etude de l'Aluminum Hydro-Electrique d'Inga (Sydelinga), composed mainly of Belgian electric interests; Societe Commerciale et Miniere du Congo (Cominiere), a Belgian group which consulted with the Harza Engineering Co. of Chicago; Compagnie Africaine des Ingenieurs-Conseils (Cadic) and a Swedish firm, Vattenbyggnadsbyran.

According to the Belgian Chamber of Commerce in the U. S., the Belgian government is said to be impressed by the Swedish report, which suggested an initial 3 million kw plant to cost $380 million and to be completed in seven years. In any event the government has recently dispatched a mission of international experts to the Congo to investigate the site, study the several reports and submit its findings to the Minister of Colonies by Oct. 1. Among the members of the mission are Clarence Blee, who recently retired as chief engineer of the Tennessee Valley Authority and F. L. Lawton, chief engi-

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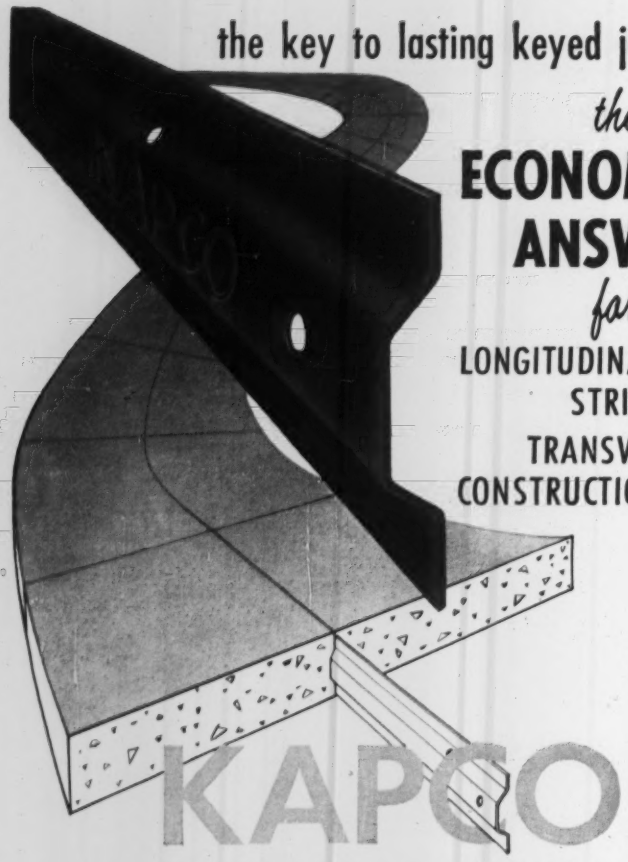

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neer of Aluminum Ltd., of Canada.

In the meantime, a group of Belgian companies have formed the Belgium Aluminum Syndicate and entered into an agreement with another newly formed international group known as Aluminga to study the possibilities of Inga Falls power utilization and to work out financing arrangements for industrial installations. Aluminga consists of Reynolds Metals from the U. S., Pechiney-Ugine of France, l'Industrie de l'Aluminum of Switzerland, Montecatini of Italy, Vereinigte Aluminum Werke of Germany, and Aluminum Ltd., of Canada. The Belgian Syndicate has a 50% interest in Aluminga, while the remaining 50% is shared by the other participants. Aluminga is said to be concerned only with the studies. Actual developments can be carried out by it or by any of the members individually.

Airport Terminal Building Is Opened in Newfoundland

A new terminal building for the airport at Stephenville, Newfoundland, was opened for operations late last month.

The terminal was designed primarily to handle domestic flights, but provisions were made for trans-Atlantic traffic when the field is used as an alternate to Gander Airport.

The elevation of the terminal floor is several feet above ground level to prevent flooding during high winds and tides. The airfield is located on low ground near the sea and is subjected to periodic flood conditions.

The building has a structural steel frame and is enclosed with porcelain-enameled steel panels and brick cavity walls.

The structure was designed by the office of the Chief Architect, Canadian Department of Transport, and built by Colonial Construction Co., Ltd., St. John's, Newfoundland, at a cost of $400,000.

New Voting Right Sought By Engineers in Canada

Revision of Canada's present election act to protest the voting rights of engineers and other non-stationary citizens was urged in a resolution passed during the recent 71st annual meeting of the Engineering Institute of Canada.

The resolution calls for extending the privilege of voting at the advance poll to engineers, pointing out that on many occasions, in the ordinary execution of their duties, engineers are absent from their homes on election day and are thus defranchised.

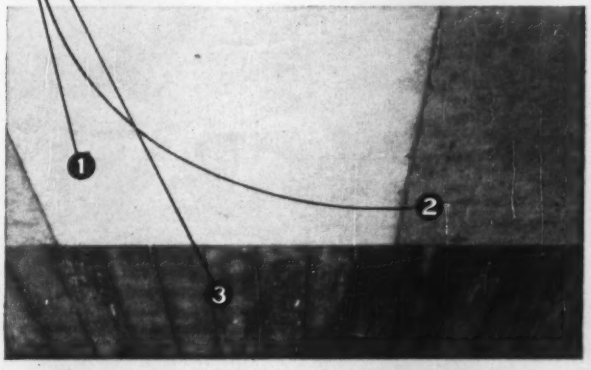
3 reasons why PLYGLAZE® high-density* overlaid plywood outperforms any form material on the market

1. FORMS SMOOTHER CONCRETE

Hard, glossy-smooth fused resin-fiber surfaces form flawlessly smooth concrete, with no trace of grain pattern. Unretouched photo shows marked difference in appearance quality of concrete cast against PlyGlaze, ordinary plywood and shiplap.

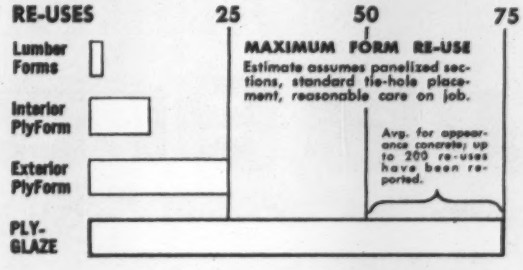
RELATIVE APPEARANCE OF CONCRETE

	Up to 50% of Max. Re-Use	Up to 100% of Max. Re-Use	Where to Use
1. PLYGLAZE	Excellent	Good	For smoothest concrete, maximum re-uses
2. PLYFORM	Good to Fair	Fair to Poor	For fairly smooth concrete, multiple re-uses
3. LUMBER	Poor	Very Poor	Where appearance and re-use not important



2. GIVES MANY MORE RE-USES

PlyGlaze's tough, hard surface stands up under hundreds of pours. With reasonable care, you'll easily get 50 to 75 re-uses. Actually over 200 have been obtained—and even then PlyGlaze continued to form good looking concrete.



3. HELPS CUT COSTS TWO WAYS

A. TIME & LABOR SAVINGS—Sharply reduces rubbing and finishing labor. Ceiling slabs can be painted direct, eliminating expensive plastering. PlyGlaze also cuts form construction, erection and stripping time. High re-use factor eliminates form reconstruction during job.

B. LOW COST PER USE—Even when cost is sole criterion, greater number of PlyGlaze re-uses frequently more than make up for higher initial cost, particularly where costs can be amortized over 25 or more pours.

COST PER-SQUARE-FOOT-PER-USE

No. Re-Uses ➤	1	10	25	50	100	200
PLYGLAZE	$0.375	.038	.015	.008	.004	.002
Exterior PLYFORM	.234	.023	.009	Gives Max. 25 Re-Uses		
Interior PLYFORM	.218	.022	Gives Maximum 10-12 Re-Uses			
LUMBER	.110	Gives Maximum 2-3 Re-Uses				

Estimates based on 30 month average for prices quoted by St. Paul & Tacoma for following material delivered in Chicago: ¾" PlyGlaze; ¾" Ext. & Int. PlyForm, mill oiled, edge sealed; 2 & btr. 1" green Douglas fir or hemlock.

POINTS IN BRIEF

- Has the strength, workability and adaptability of ordinary plywood.
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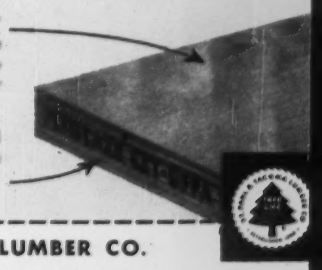
Hard, glossy, translucent high density* fused-resin fiber overlay bonded to both sides of panel. Resin content controlled to give exact amount of hardness and wear resistance required for form work.

Base panel is top quality DFPA-Inspected solid core Exterior fir plywood. Available in all standard sizes, thicknesses.



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*HIGH DENSITY (glossy, translucent overlay) is special concrete form panel. MEDIUM DENSITY overlay (opaque with texture similar to drawing paper) is paint grade; not for form work.

University of California, general classrooms and office building, Los Angeles, Calif. Austin, Field and Fry, architects. Robert E. McKee Co., contractor.

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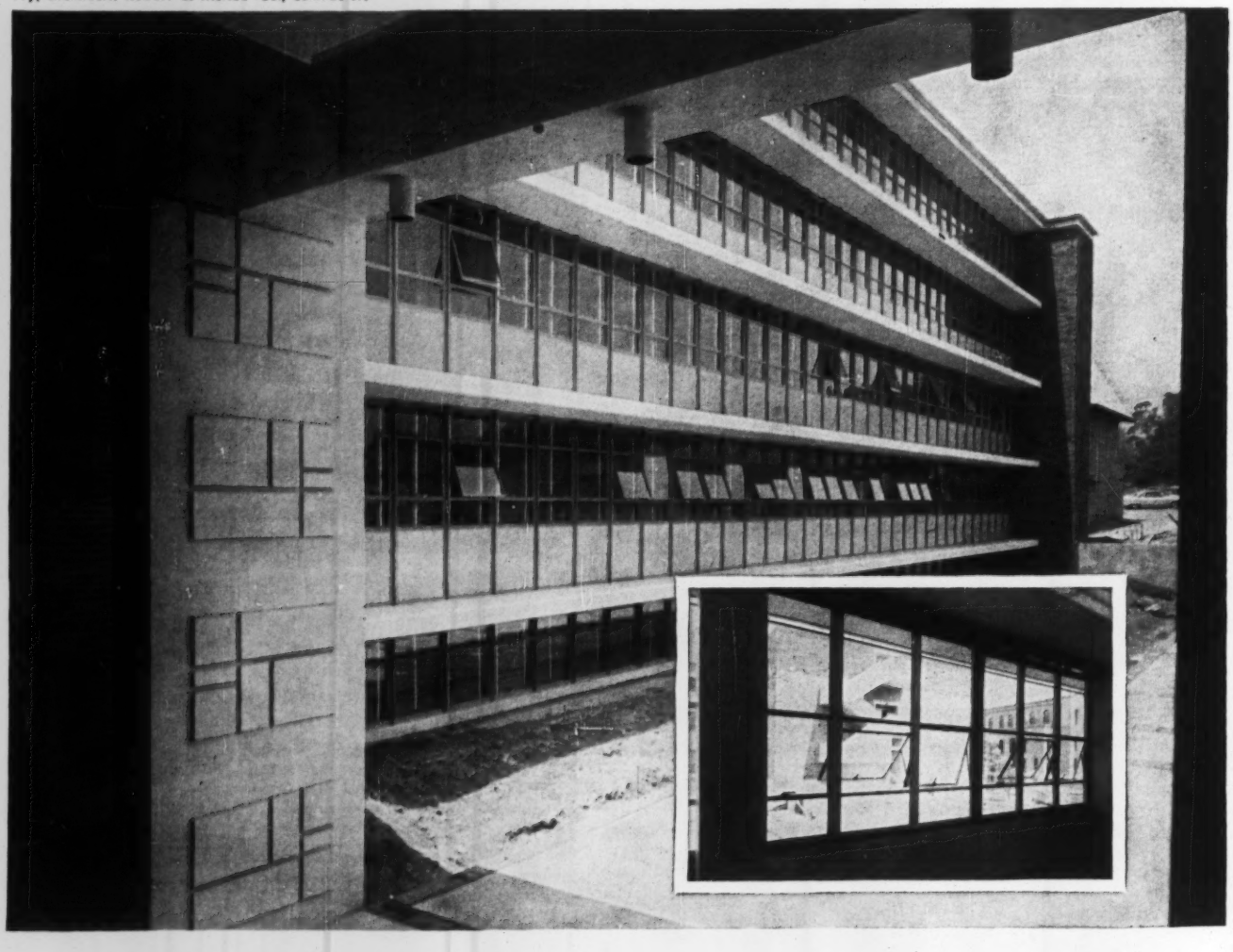

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See how effectively Vision-Vent blends with masonry to create truly imposing buildings that are completely functional.

Vision-Vent is Truscon's exciting method of fast, economical wall construction. Vision-Vent goes up like other curtain-wall systems. Fast. Easy. With this important plus—it's a wall with window already in place.

The Vision-Vent system incorporates all mass-production and installation economies of standard steel windows. Each module is complete, sill to ceiling, including fixed lights, awning-type ventilator or Truscon Double-Hung Steel Window, and insulated panel.

For design distinction, insulated panels may be furnished in *colored* porcelain enamel, stainless steel or aluminum. Panels have an insulating value equal to that of an ordinary masonry spandrel wall. They retain interior heat; they provide for air-conditioning efficiency. Wall thickness of less than 1½ inches provides extra square-feet of floor space. Light weight is reflected in structural savings.

Vision-Vent has had a tremendous success in all types of single- and multi-story applications. Truscon window engineers will be glad to study your plans and develop design details and costs. More facts in Sweet's, or send coupon.

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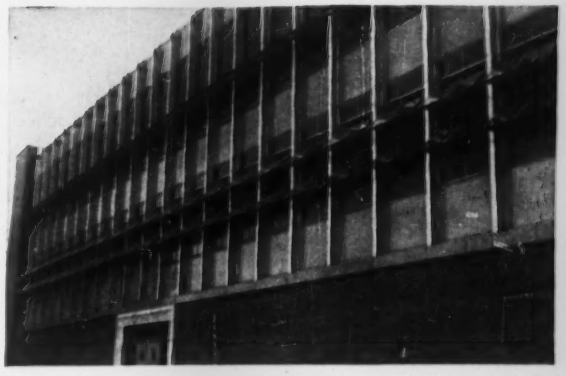

STAINLESS STEEL IS THE COMPANION TO CURTAIN-WALL. Brown-Forman Distillers Corporation's new Early Times Fermenter Building at Louisville, Kentucky, features Truscon® Vision-Vent® Window Wall Units supported by Stainless Steel Mullions. ENDURO® Stainless Steel harmonizes beautifully with other building materials. Its high strength-to-weight ratio provides needed strength without added bulk, permitting savings in construction costs. ENDURO resists rust and corrosion. Offers immunity to weathering effects. Never needs painting. Never discolors with age.

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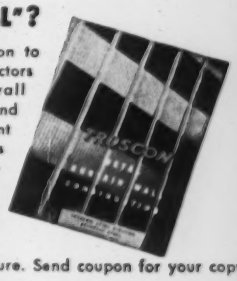
Architects for the Early Times Building, Joseph & Joseph; Contractor, F. W. Owens Company.

THINKING "CURTAIN WALL"?



New Truscon booklet offers information to help architects, engineers and contractors make most efficient use of curtain-wall construction. It contains design data and detail drawings covering seven different Truscon Metal Curtain-Wall types. It shows how the Truscon system meets architectural and structural requirements without losing the benefits of efficient shop fabrication, with the designer maintaining full freedom of choice in adapting the proper wall to the structure. Send coupon for your copy.

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Proven construction worker available

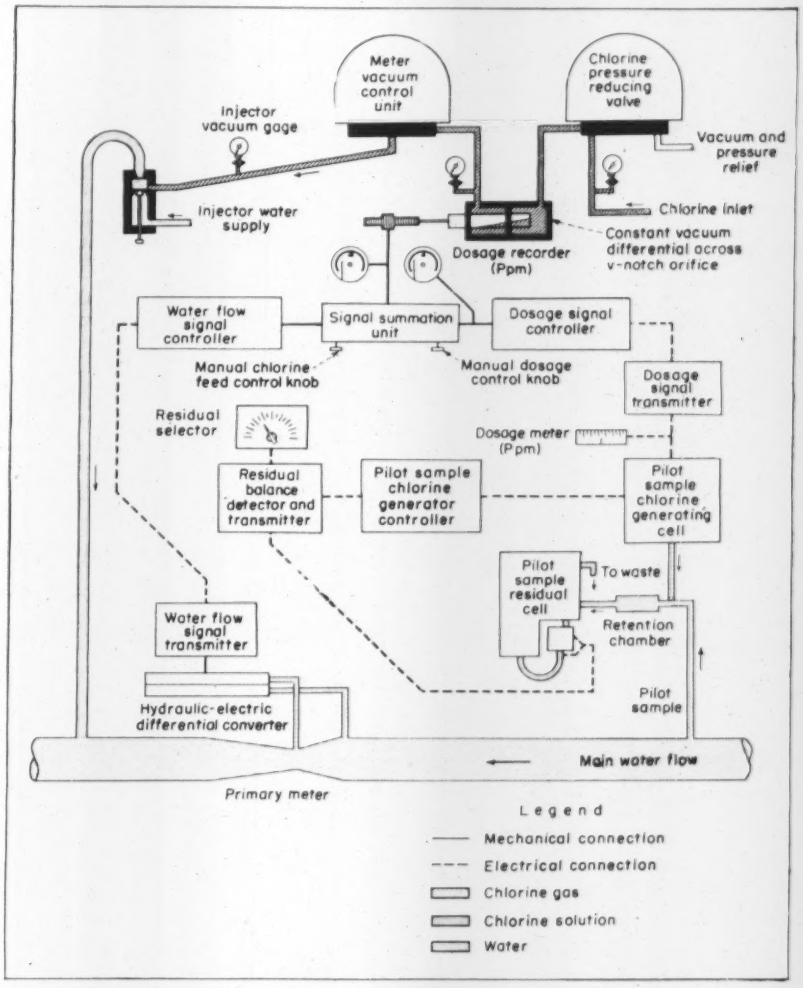
HAS FOUR-YARD SHOVEL . . . WILL TRAVEL

Will travel . . . there's the key to the real value of an Allis-Chalmers HD-21G tractor shovel. It not only digs and loads four yards at a pass, it is mobile enough to work in all parts of the excavation . . . and flexible enough to do many different jobs well.

Besides loading trucks, the HD-21G can help maintain haul roads, carry material to stockpiles, clean up stray rock, or even travel ahead of the job to clear land.

Let your Allis-Chalmers dealer show you the many ways an HD-21G can work profitably for you. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS *Engineering in Action*



Chlorinator Adjusts to Demand and Flow

The first commercially available chlorinating system that will automatically maintain a desired residual in accordance with chlorine demand as well as flow of water was unveiled by Wallace & Tiernan in Atlantic City at the annual American Water Works Association convention.

An operator merely selects via a knob the required chlorine residual—either free or combined—and the quality-quantity system does the rest. The key new unit is an electronic dosage controller which operates in conjunction with a standard V-notch chlorinator, vacuum type pressure reducing valve and a hydraulic-electric differential converter which senses variations in flow.

The dosage controller, incorporating a sampling device and a residual detector cell, produces an electrical signal which is proportional to the chlorine demand of the water. The converter, which incorporates a Venturi or orifice plate, provides a similar electrical signal proportional to flow of water in the main line. Both electrical currents are applied to a small motor which drives the V-notch plug in the chlorinator.

Feed range of the chlorinator is 100 to 1, which can be divided up as desired between quantity (flow) and quality (demand) ranges. For example, if water flow range is 20:1, demand range may be 5:1, if flow range is 10:1, demand range may be 10:1. Chlorine residual set point ranges in the dosage controller are 0 to 1 ppm, 0 to 2 ppm and 0 to 5 ppm. Maximum capacity of the main chlorinator is 2,000 lb per day.

Although many who saw the new chlorinating system in Atlantic City were both impressed and depressed by the seemingly complicated mechanisms of the dosage controller (right portion of unit in photo), it should be noted that the system is relatively simple compared to most electronic circuitry.

Considering just the four main units of the chlorinating system discussed above, cost of the complete system is roughly three times that of a system less the automatic dosage controller. However, this ratio decreases when necessary piping is included.

First installation of the new system is in the Linden, N. J., power plant of Public Service Electric & Gas Co.

How the dosage controller works is indicated in the diagram. It draws a continuous sample of water ahead of the chlorination point and the sample is chlorinated in a small cell which generates current in proportion to chlorine feed. After a preset retention time, usually 2 min, the chlorinated sample passes through a residual detecting cell. Any unbalance between the detected residual and the selected residual changes the current applied to the sample chlorinating cell and consequently the amount of chlorination given the sample so that residual of the sample matches the selected value.

This change in current applied to the sample chlorinating cell is detected, transformed and applied to the V-notch plug drive motor to vary the main chlorinator feed rate. Thus, feed rate adjustments in accordance with quality of raw water are made once every preset retention time. The converter adjusts feed rate to follow continuously.—Wallace & Tiernan Inc., 25 Main St., Belleville 9 N. J.

(*New Products continued on page 70*)

AUTOMATIC SYSTEM consists of chlorinator (left) and electronic dosage controller.

1000 p.s.i. working pressure

The only non-metallic pipe that truly withstands this pressure ... and will not corrode!

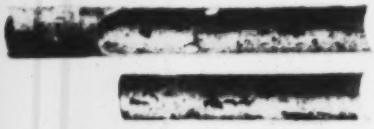
Note how Fibercast follows the ditch contours yet is rigid and stable like pipe should be

Fibercast LINE PIPE

Proven long service life under rugged line pipe requirements. A born "roughneck" in handling sour crudes, salt waters, paraffining, etc. Pressures up to 1,000 pounds operating. Takes pumping surges in stride — heated fluids to 260° F. Expansion coefficient compares to steel. Couples quickly — light to handle — Stays and saves where other pipe just wastes away.

FIBERCAST WILL NOT CORRODE!

FIBERCAST . . . 2 years with no deterioration.



Plastic Coated Steel . . . 9 months; failure.

WELL TUBING FIBERCAST LINE PIPE

THE FIBERCAST CORPORATION
P. O. Box 727 — Sand Springs, Oklahoma
A Subsidiary of The Youngstown Sheet and Tube Company

THE FIBERCAST CORPORATION
P. O. Box 727, Dept. 277 — Sand Springs, Oklahoma
Please send full information on Fibercast Line Pipe and/or Well Tubing

Name_____
Title_____
Company_____
Address_____
City_____ Zone_____ State_____

. . . New Products

Zinc Spray Protects Steel Members From Corrosion

Structural steel members can now be protected against corrosion by coating the steel with a fine layer of zinc.

The spraying process employs a pneumatic gun that shoots finely powered zinc through an oxy-acetylene flame to make the zinc powder semi-molten just before it is deposited on the surface of the steel. The particles of molten metal flatten as they strike the surface, forming a layer that enters the irregularities of the steel surface and mechanically locks itself to the base metal.

A coating 0.001 in. thick is sufficient if the member is to be painted. Thicknesses between 0.005 and 0.007 in. are required if the steel is to remain unpainted.

The spray process has been used before on metal products and structures so large that hot dip galvanizing was impractical.

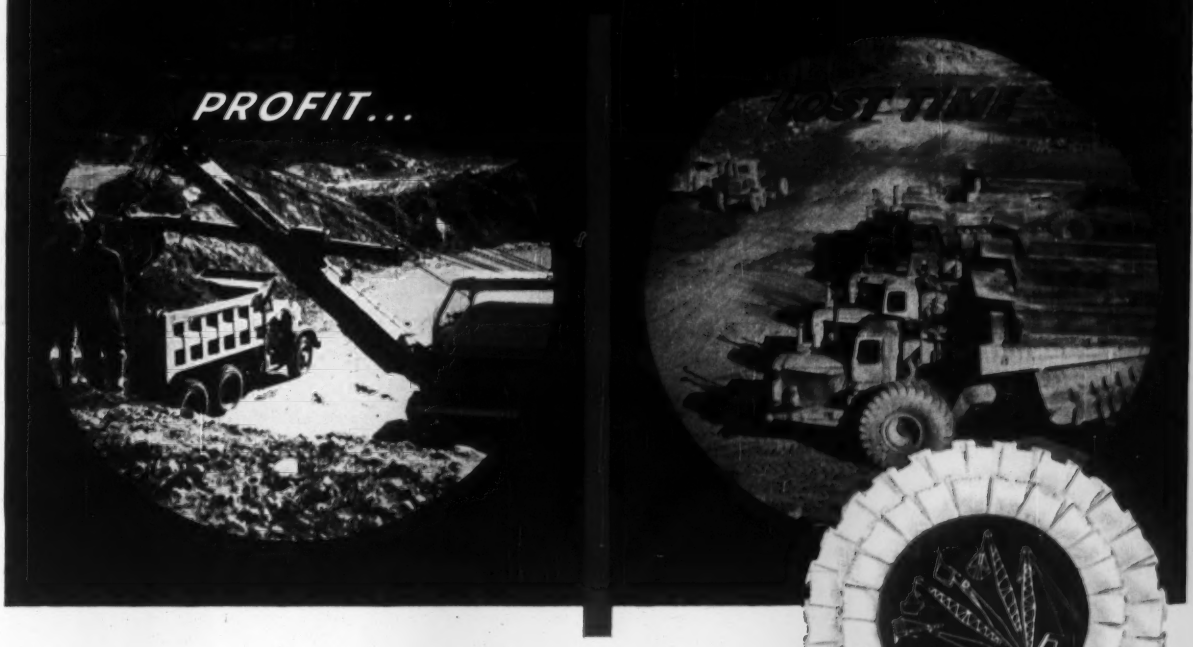
It is claimed that the zinc spray not only serves as a barrier to seal out corrosive moisture but that it also gives steel electrolytic protection against rust. SCHORI PROCESS CORP., 8-11 43 ROAD, LONG ISLAND CITY, N. Y.

New Series of Pumps For In-Plant Service

End suction centrifugal pumps in sizes up to 7½ hp now are being produced for general purpose in-plant use. They are available in close coupled horizontal and vertical mountings.

The pumpline was designed to meet critical suction conditions and the units are said to possess low net positive suction head characteristics. Electric motor drives are available.—AURORA PUMP DIV., THE NEW YORK AIR BRAKE CO., 125 LOUCKS ST., AURORA, ILL.

Which side of the line is your equipment on?



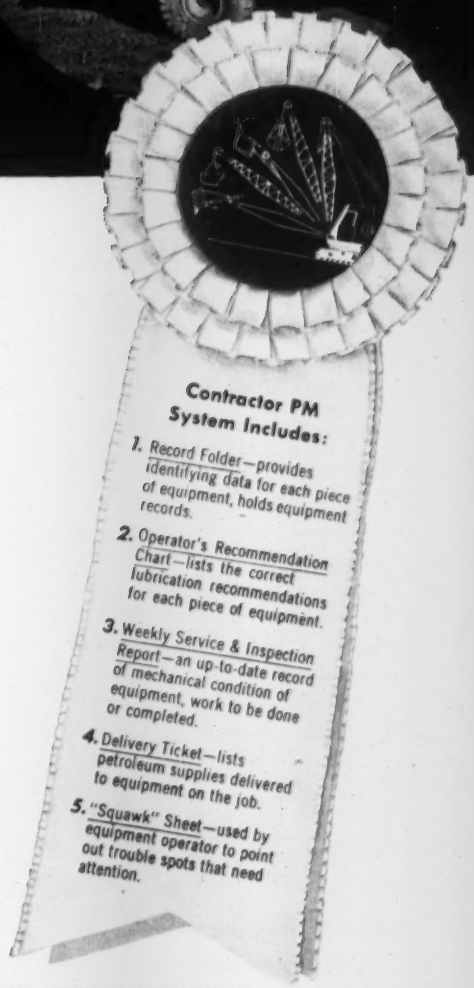
Socony Mobil's Contractor PM System and Correct Lubrication Program help assure long equipment life . . . bigger job profits!

Improper lubrication often causes on-the-job breakdowns that cost you time and money. You can help keep your equipment in condition to start and complete the job by using Socony Mobil's practical new Contractor PM System and complete Correct Lubrication Program, which include:

Famous Quality Products such as Delvac Oils, New Mobilube GX Multipurpose-type Gear Lubricant and Mobilgrease MP.

Lubrication Engineering Service covering analysis, advice and use of Socony Mobil's technical know-how.

Ask your Socony Mobil representative to show you how this effective system can help you.


Contractor PM System Includes:
1. Record Folder—provides identifying data for each piece of equipment, holds equipment records.
2. Operator's Recommendation Chart—lists the correct lubrication recommendations for each piece of equipment.
3. Weekly Service & Inspection Report—an up-to-date record of mechanical condition of equipment, work to be done or completed.
4. Delivery Ticket—lists petroleum supplies delivered to equipment on the job.
5. "Squawk" Sheet—used by equipment operator to point out trouble spots that need attention.

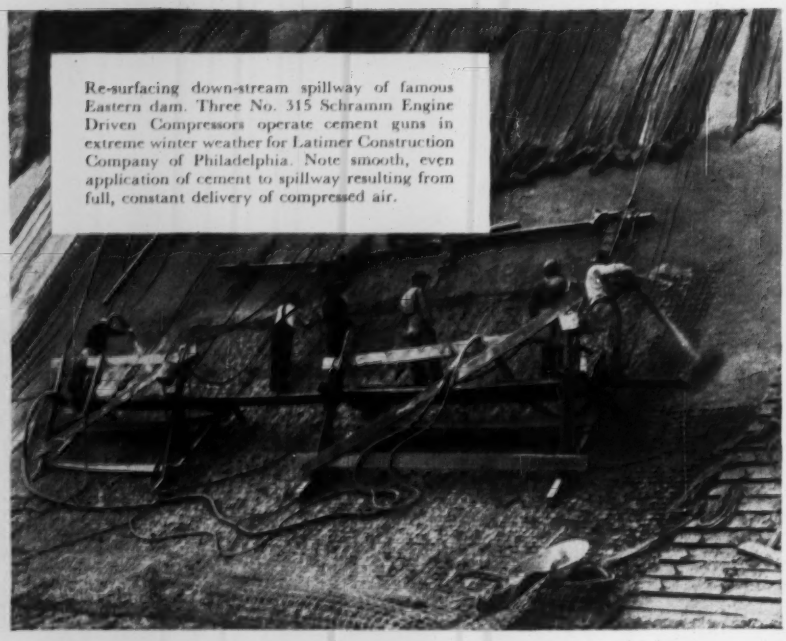
SOCONY MOBIL Mobil

Leader in lubrication for over 91 years

Correct Lubrication

A PROVED PROGRAM TO REDUCE EQUIPMENT MAINTENANCE COSTS

SOCONY MOBIL OIL COMPANY, INC., and Affiliates: MAGNOLIA PETROLEUM COMPANY, GENERAL PETROLEUM CORPORATION



Re-surfacing down-stream spillway of famous Eastern dam. Three No. 315 Schramm Engine Driven Compressors operate cement guns in extreme winter weather for Latimer Construction Company of Philadelphia. Note smooth, even application of cement to spillway resulting from full, constant delivery of compressed air.

CONSTRUCTION "SUPERS" SAY:

"Best for Guniting on any dam"

Guniting contractors give a heap of reasons for preferring Schramm Unistage Air Compressors. The two we hear most often are: (1) "Schramm provides *constant pressure*—free from variation." (2) "Schramm operates at *any desired pressure* for long periods without maintenance."

How do Schramm Unistage Compressors deliver full, even pressure when other units can't? The answer is PNEUMASTAT®, a patented Schramm instrument that automatically regulates production of compressed air according to demand. Also, Pneumastat-controlled Schramms can be operated as a battery to give any required volume of air. Schramm engines run at the speed for which they are designed. You get just the pressure you want without overspeeding. Consequently, maintenance costs are low.

Other reasons for low maintenance expense? Plenty of them! Schramm mechanically operated poppet-type intake valves last as long as the compressor. Schramm multiple cylinder construction means less work for each discharge valve. And Schramm vibrationless operation and pressure lubrication assures longer bearing and cylinder life.

If your Guniting or cement work suffers from fluctuating pressures, get full details of Schramm Unistage Compressors today. Send for your copy of Catalog 5501 without obligation, or see your local Schramm Dealer. He's listed in the Yellow Pages of your Telephone Directory.

Schramm Air Compressors are preferred for Guniting and concrete spraying because of the constant pressure (freedom from fluctuations) and ability to operate at any desired pressure for long periods without maintenance.

Schramm Portable Compressors are easy to install, individually or as a battery. Unistage Models are available in sizes 125, 210, 315 and 600 cfm.

Schramm, Inc.

MANUFACTURERS OF AIR COMPRESSORS

620 North Garfield Ave. West Chester, Pa.

Publications

Clay Pipe—An illustrated 4 page brochure describes properties and assembly of vitrified clay pipe with a snap-together plastic joint. ROBINSON CLAY PRODUCT CO., 65 W. STATE ST., AKRON 9, OHIO.

Water seals—A one-sheeter gives blueprint type specifications for polyvinyl plastic waterstops for concrete construction joints. Table lists recommended joint application and water head for each size and kind of waterstop. WATER SEALS, INC., 9 S. CLINTON ST., CHICAGO 6, ILL.

Concrete topping—A 4 page folder describes Super-Bonsit, a liquid latex emulsion that is substituted for most of the mixing water in mortar, plaster and concretes. Mixing and application instructions, along with results obtained with the topping on jobs under varying conditions, are included. SUN CHEMICAL CORP., 10 ST. & 44 AVE., LONG ISLAND CITY 1, N. Y.

Vermiculite insulation—A booklet on vermiculite loose-fill building insulation has been revised to include reference to a new Federal specification covering vermiculite. The booklet outlines vermiculite uses and applications under the new requirements. VERMICULITE INSTITUTE, 208 S. LASALLE ST., CHICAGO 4, ILL.

Polyethylene uses—A 13 minute, color-sound slide film illustrates the use of polyethylene in permanent and temporary applications in the building industry. Called "Building Better for Less", the film also discusses moisture problems and ways polyethylene can be used to solve them. OLIN MATHIESON CHEMICAL CORP., 460 PARK AVE., NEW YORK 22, N. Y.

Steel panel buildings—Four types of Stefco Standard Panel Type buildings are described in a catalog that includes cut away drawing of double span, clear span, high center bay with leanto and center bay with leanto buildings. Also illustrated are seven different window and door combinations. NAT LEHMAN, STEFCO MANUFACTURING CO., P. O. Box 25, CINCINNATI 36, OHIO.

Asbestos-cement shingles—A manual on application of asbestos-cement roof shingles demonstrates a new low-slope method for applying shingles to decks sloping from 2 in 12, to 5 in 12 in. Illustrated with detail drawings, the manual gives instructions covering

Strong candidate for
"MOST USEFUL MACHINE"

John L. Bellinger, President of K.E.B. Constr. Co., Inc., North Syracuse, N. Y., sizes up the CAT* D4 Tractor-No. 40 Scraper Unit as follows:

"This is one of the most useful pieces of machinery we own, for we can do so many jobs with it. We clear land, build roads, carry fill and dig cellars, all with this one unit. It has proven its value in our work."

The job pictured here is on a residential housing development near DeWitt, N. Y. The sturdy D4 Tractor has plenty of power to self-load the scraper in clay and hardpan, averaging a heaped 4.5 cu. yd. per load. For land clearing and rough grading the scraper is quickly detached and the No. 4A Bulldozer takes over.

The D4 fills an important place in practically any spread. It's a handy size, small enough to be moved easily from job to job; big enough to give you real production. Teamed up with the No. 40 Scraper on short hauls, its performance often rivals that of larger machines.

The Caterpillar Engine delivers 50 drawbar HP and gives the tractor 10,700 lb. maximum drawbar pull. It's economical on fuel, using No. 2 furnace oil without fouling. The optional oil clutch adds easy shifting, long life and simplified maintenance.

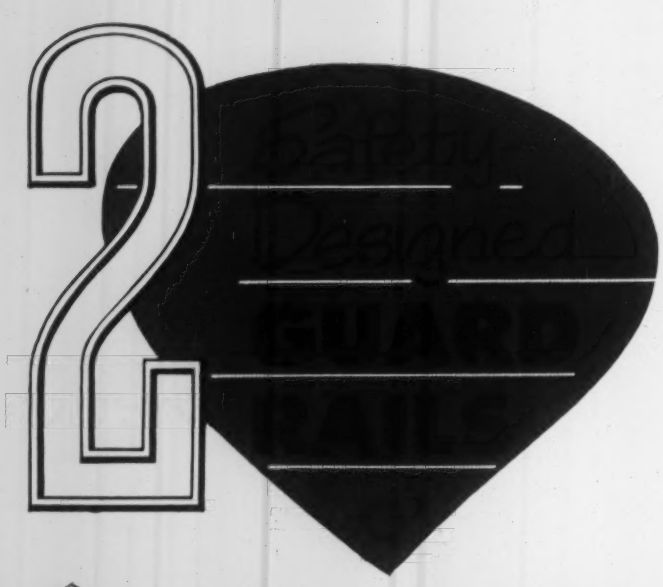
Designed to match the D4 for top efficiency, the No. 40 Scraper loads fast, has quick, positive ejection and is ruggedly built to stay on the job. Your Caterpillar Dealer can show you how these units can make money for you. Ask him for a demonstration on your own job. He backs the long productive life of the machines he sells with reliable service and Caterpillar parts.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

WANTED—
THE HARD WORK



USF BARRIER-BEAM

Note these famous USF design features: (1) deep corrugations for high impact resistance, (2) broad surface area for maximum visibility, (3) exclusive rounded Safety Top edge, (4) convenient off-post splicing for faster erection. Use economically for highways, parking lots, parks, race tracks, bridges and approaches.

USF UNIVERSAL-BEAM

A new, specially-designed beam-type rail that lays either end to traffic and solves stock problems because it is completely *interchangeable* with similar parts of other manufacturers. 9-bolt connection with oval neck bolts assures maximum joint strength.

Both Barrier-Beam and Universal-Beam are available in either 10 or 12 gauge.

Write for more complete information.

UNITED STEEL FABRICATORS, INC.

WOOSTER, OHIO

PRODUCTS

Hollow Metal Doors • Prefabricated Metal Buildings • Window Wells • Highway Guard Rail • Bridge Flooring • Steel Forms for Concrete Bridge Floors • Corrugated Metal Pipe • Sectional Plate Pipe and Pipe Arches

every aspect of asbestos-cement roof shingle application. ASBESTOS-CEMENT PRODUCTS ASSOCIATION, 509 MADISON AVE., NEW YORK 22, N. Y.

Treated timber poles—A handbook devoted to timber poles and their uses contains data on the service life, recommended preservatives and treatments, working stresses and wind load tables for pressure-treated poles. Also discussed are utility lines, highway lighting and structural properties of poles. AMERICAN WOOD PRESERVERS' INSTITUTE, 111 WEST WASHINGTON ST., CHICAGO 2, ILL.

Scraper—The Oliver Corp. has issued a new bulletin on its 990 scraper. With a 6.7 cu yd heaped capacity, the machine is said to be ideal for a small contractor for many grading, filling, spreading and cleanup assignments. The bulletin describes and illustrates features and includes specifications. THE OLIVER CORP., 400 W. MADISON ST., CHICAGO 6, ILL.

Wire Rope—A colorful bulletin, Wire Rope Recommendations for General Contractors, has been prepared. It describes the manufacturer's complete line of Tru-Lay preformed wire rope, wire rope accessories and Dualoc boom cable assemblies. AMERICAN CABLE DIV., AMERICAN CHAIN & CABLE CO., INC., WILKES-BARRE, PA.

Water Sprinklers—Information on two types of water sprinklers is now available. The truck and trailer units—800 to 1,500 gal capacity—with gravity feed are equipped with spray bars 8 ft long and 2 in. in diameter. Pressure type spray bars also are available. A pressure type, truck mounted sprinkler can be equipped with an 8 ft to 24 ft long bar. Pump size is 2 or 3 in. in diameter, depending upon the length of spray bar used. LITTLEFIELD BROS., INC., 457 E. PEARL ST., CINCINNATI 2, OHIO.

Pinch valves—A complete line of pinch valves is covered in a 48 page catalog, half of which is devoted to data on sizing and installation. Long used in industry, the pinch valve (a flexible hose between adjustable clamps) now is being promoted for use in the sewerage field on sludge lines. Main advantage of this type valve is its ability to handle most any type of liquid by using hose, or bodies, of rubber, neoprene, butyl or nylon, depending on liquid characteristics. CATALOG NO. FL-1116.—FARRIS FLEXIBLE VALVE CORP., 400 COMMERCIAL AVE., PALISADES PARK, N. J.

Nationwide service on Bitumuls & Asphalt for every paving need...all from one source!

PENNSYLVANIA: Laykold® Asphaltic Concrete solves a tough paving problem on the Liberty Bridge, a major approach to downtown Pittsburgh. (When it comes to pavements, bridges are notoriously "bad actors" because expansion and contraction of the deck result in an unusual degree of movement under the surfacing). Based on previous use of Laykold Asphaltic Concrete, Department of Public Work officials for Allegheny County knew that this material retained an extra measure of resilience after placement and compaction, with no decrease in load-bearing value.

Mixed with slag aggregate, a 120 lb. "LAC" binder course and a 100 lb. "LAC" surface course were placed over an area of some 32,000 sq. yds. Trumbull Construction & Asphalt Company of Pittsburgh did the work. American Bitumuls & Asphalt Company supplied the asphalt and the Laykold Tempering Fluid.

Results to date: excellent service; no pavement failures.

CALIFORNIA: Across the nation, on the Pacific Coast, the State of California Department of Highways let a half-million-dollar contract for re-surfacing 41 miles of U. S. Highway 99 to the Schroeder Company, of Sun Valley, California. For this job, American Bitumuls & Asphalt Company supplied: 1,700 tons of Air Refined Asphalt; 3,500 tons of Paving Asphalt; 140,000 gallons of Bitumuls® Emulsified Asphalt.

LOUISIANA: While "down South," on the construction of a road for private industry at Grand Isle, La., American Bitumuls & Asphalt Company supplied Bitumuls Emulsified Asphalt for 20,000 sq. yds. of 3-course surface treatment work on which *clam shells* were used as aggregate. As cover aggregate, shell produces a long-wearing surface.

Whenever . . . and wherever . . . your paving job calls for asphalt or asphaltic products, call our office nearest you. *That's your single source for all your asphalt requirements.*

American Bitumuls & Asphalt Company

200 Bush St., San Francisco 20, Calif. Perth Amboy, N. J.
Baltimore 3, Md. St. Louis 17, Mo. Cincinnati 38, Ohio
Mobile, Ala. San Juan 23, P. R. Tucson, Ariz.
Inglewood, Calif. Oakland 1, Calif. Portland 7, Ore.

HIGH efficiency...
LOW COST...
the BANTAM CRAWLER-MOUNTED BACK-HOE
with
CONTINENTAL RED SEAL POWER

C-35 Crawler Bantam's long reach enables the operator to spot overburden away from the trench, while the new narrow design of Bantam's gooseneck boom improves visibility, speeding the work. Built by Schield Bantam Co., Waverly, Iowa. Engine: Continental Red Seal F-186.
CONTINENTAL MOTORS
Powerful as the Nation
AMERICA'S STANDARD

Famous Schield Bantam equipment is another notable example of the fine results to be achieved by tailoring the engine to its job. With Schield Bantam, as with other leading makes of power equipment, each Red Seal used has been engineered and built expressly for its work. Whatever the machine . . . whatever its job . . . you can bank on it for abundant power at the speeds consistent with low fuel and upkeep cost.

CONTINENTAL SERVICE AND GENUINE RED SEAL PARTS AVAILABLE THROUGHOUT THE WORLD

●

WORLD'S LEADING INDEPENDENT MANUFACTURER OF INTERNAL COMBUSTION ENGINES, CONTINENTAL MOTORS OPERATES PLANTS IN ATLANTA, DALLAS, DETROIT, MILWAUKEE, MUSKEGON, AND TOLEDO, AND IN ST. THOMAS, ONT., PRODUCING AIR-COOLED AND LIQUID-COOLED ENGINES FOR USE ON LAND, AT SEA AND IN THE AIR.

Continental Motors Corporation

MUSKEGON • MICHIGAN

Books

Books & Pamphlets

• **Dust explosions**—An 84 page report of important dust explosions has been issued by the National Fire Protection Association. The report is in two sections—the first summarizes recent significant explosions of many of the more common dusts; the second is a tabulation of causes, casualties and property damage of all dust explosions since 1860. The report is available for $3.00 from the NFPA, 60 Batterymarch St., Boston 1, Mass.

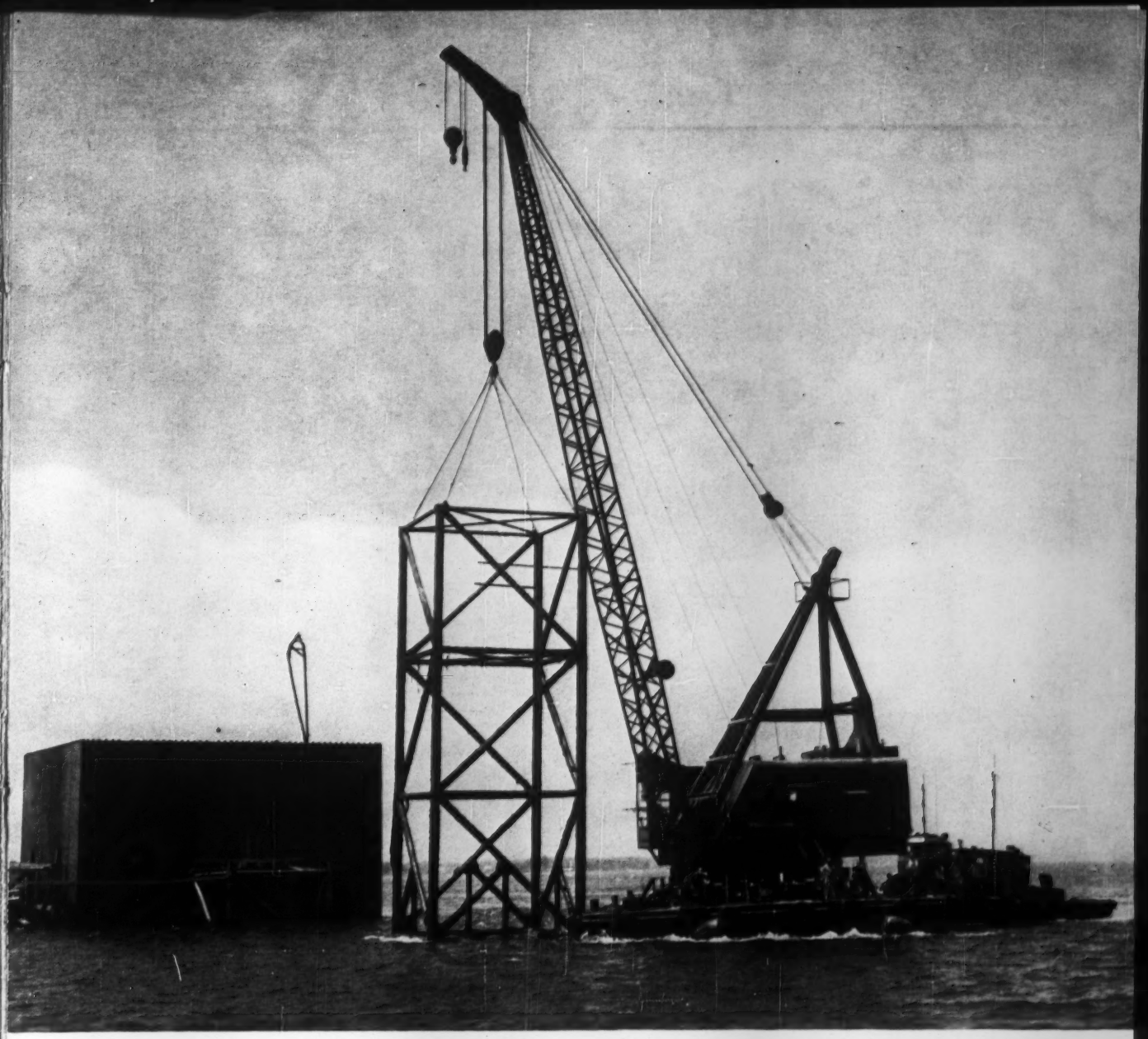
• **Information about timber**—The American Institute of Timber Construction has established an information service to keep architects, engineers and contractors up-to-date on engineering developments in timber. The organization also will collect and disseminate information of interest to investors, wood-using industries and the general public. Edwin R. Butler, former manager of advertising and publicity for Timber Engineering Co., will head the new department. It will be located at AITC headquarters, 1757 K St., N.W., Washington 6, D. C.

• **Septic tank design**—USPHS has put out an 85 page "Manual of Septic Tank Practice" for use as a guide by health agencies, building officials and builders. It presents septic tank design from a practitioners viewpoint, covering installations for private homes, institutions, recreational areas and other similar establishments. The book is available from the Government Printing Office, Washington 25, D. C., for 35 cents.

• **Small sewers**—A Building Research Advisory Board report to FHA called "Small-Size Pipe for Sanitary Lateral Sewers" has been published. The report recommends a minimum 8 in. diameter for street sewers and discusses design and operating experiences for 6 in. pipe.

The report is available from the National Academy of Sciences, 2101 Constitution Avenue, Washington 25, D. C., at $1.50 a copy.

• **Computer program**—An electronic digital computer program for the borrow pit computation has been published as Research Report No. 20 by Massachusetts Institute of Technology and the Massachusetts Department of Public Works. Two MIT professors, P. O. Roberts and V. J. Roggeveen, worked up the program, the IBM 650 computer.



WIRE ROPE AT WORK

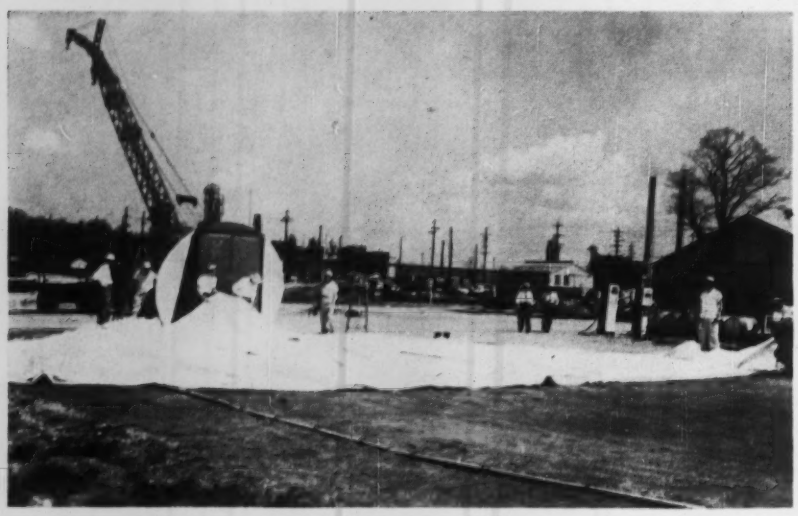
A great bridge is not erected overnight, and months of dogged effort are required before the span begins to take shape. Here's a scene that was common during the early work on the Rappahannock River Bridge—a $15,000,000 project in eastern Virginia. When completed, the bridge will link White Stone and Greys Point, thereby crossing the river at one of its broadest parts.

The photograph shows equipment of the Diamond Construction Company positioning a guide tower. The crane was rigged with Bethlehem wire rope, 1-in. Purple Strand. Bethlehem rope was also used for handling caisson domes, and for excavating through the caisson wells. Almost anywhere you looked, in fact, some of this tough steel cable could be seen in action, lifting, lowering, or pulling heavy loads.

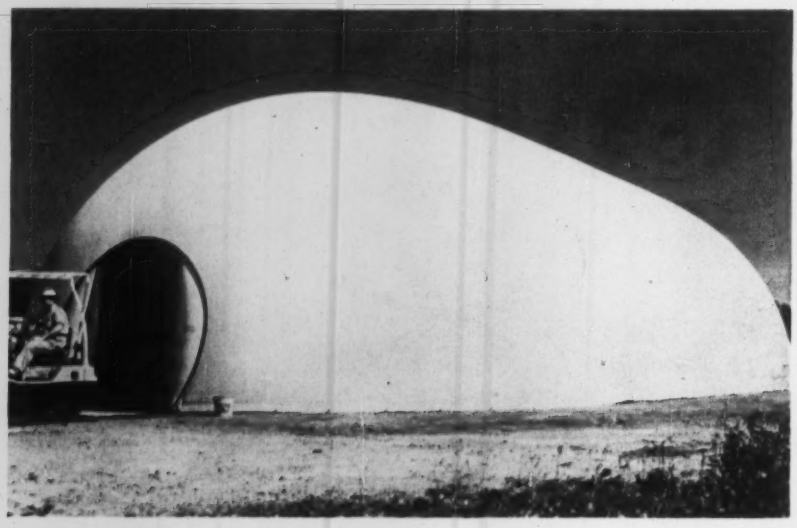
Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:

CONSTRUCTION • EXCAVATING • MINING • QUARRYING • PETROLEUM • LOGGING • MANUFACTURING



Portable, Inflated Structure Is . . .



. . . Used as Temporary Warehouse

Du Pont engineers erected a 40 x 80 ft air-supported shelter to store building materials to be used in the construction of a new plant at Parkersburg, W. Va. The mushroomed-shape building is made of nylon fabric coated on both sides with synthetic rubber. The material is waterproof airtight and translucent.

A door at one end allows a fork-lift truck to enter without affecting the inflated building. The door is padded with urethane foam so the truck can bump it open. After the truck passes, the door closes automatically to seal the shelter.

The pneumatic shelter is said to provide low-cost, short-term storage space. After use at this site, it will be deflated, shipped and re-inflated on another job.

Air pressure inside the shelter is maintained slightly greater than the outside pressure by a centrifugal blower. A 1 hp motor furnishes up to 6,600 cfm. When power fails, the pressure will support the shelter for 24 hours with infrequent door openings. The structure can withstand rain, snow and winds up to 70 mph, it is claimed.

The portable warehouse was developed and manufactured by Birdair Structures of Buffalo, N. Y.

Floating Ranges Guide Dredges in Rough Water

Novel floating ranges, specially constructed to meet the fast water conditions of dredging work in the south Cornwall channel of the St. Lawrence Seaway, will be tried out by the Army Engineers. The Engineers, contracting agent for the St. Lawrence Seaway Development Corp., are dredging the channel upstream of the present Roosevelt Bridge.

The floating ranges are steel-fabricated pontoons topped by a tower and light needed to provide a stabilized point of reference for the dredge operators. Anchored in the channel with 2 ton concrete anchors, the ranges will make it easier for the dredgers to define the work limits of the channel.

The floating ranges are 10 ft long, 4 ft wide and 2½ ft deep, all welded steel. Atop the "deck" of each range is a steel tower, 6 ft high, and atop the tower is a small battery powered light.

Computer Is Key to Early "308" Review of Columbia

An electronic digital computer is being used by the North Pacific Division of the Corps of Engineers to produce much of the data required in its current review of the 1950 "308" report on the Columbia River, scheduled for October, 1957, completion.

Using manual methods for the 1950 report, only one multipurpose multiproject system for the Columbia could be analyzed. With the computer, 10 different systems, comprising 40 to 60 separate projects, are being studied. And today's analyses are more complex, involving the interrelationship of thermal with hydro power. The computer has been producing in 1½ minutes what would require 3 hours by non-electronic methods.

The computer is proceeding in much the same manner as river systems have been analyzed by hand. Curves and parameters of proposed projects are combined with flow data and multipurpose demands. One advantage other than rapidity of operation is that the computer is permitting more mathematical preciseness.

CLOW BELL-TITE CAST IRON PIPE

costs less to buy, less to lay!

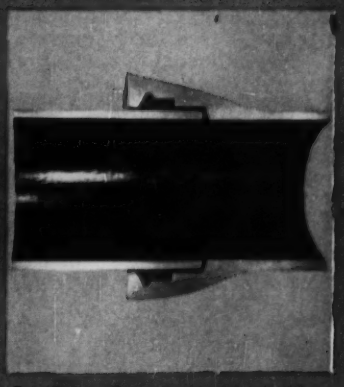
Assembly is simple. First, the joint is wiped clean.

Second step — insert gasket as shown into groove in bell.

Third—apply thin film of special lubricant to the gasket.

Next—push home the spigot, first centering plain end in bell.

No bolt holes are required. Installation is very rapid.



Result—a safe, economical joint with a tight, permanent seal.

The NEW CLOW BELL-TITE cast iron pipe joint is a rubber seal joint that requires NO bolts, NO nuts, and requires NO wrenches to lay. It takes less time to install. It costs less to buy. Here's economy PLUS.

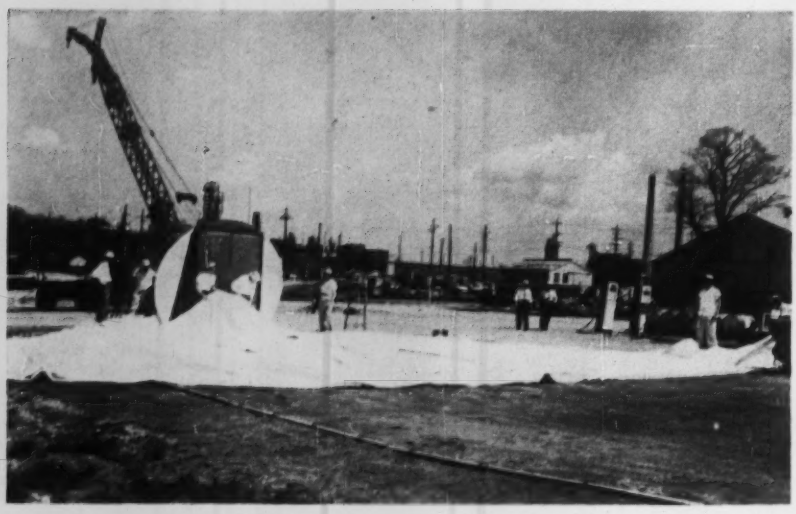
The Underwriters' Laboratories, after testing the joint, have approved its use for water working pressures up to 350 psi. CLOW BELL-TITE pipe barrel meets all quality provisions and physical requirements of all applicable ASA, AWWA, and/or Federal Specifications for cast iron pipe.

SINCE 1878

JAMES B. CLOW & SONS, INC.

201-299 North Talman Avenue, Chicago 80, Illinois

Subsidiaries: Eddy Valve Company, Waterford, New York • Iowa Valve Company, Oskaloosa, Iowa



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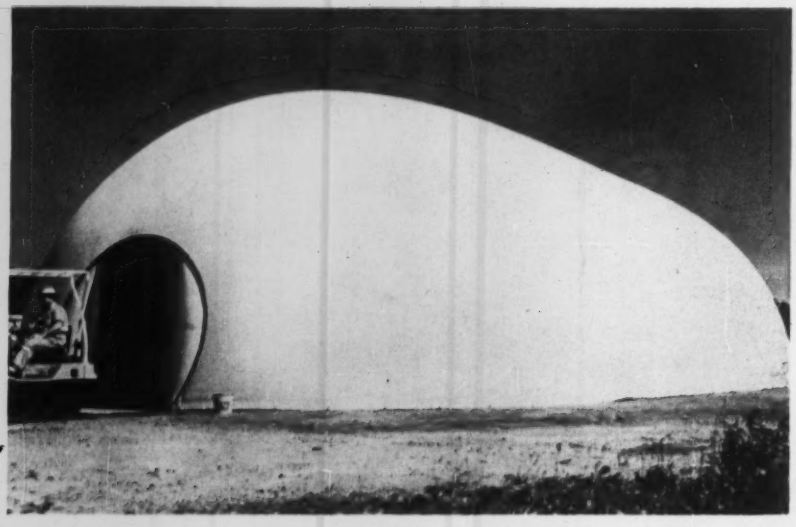

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An electronic digital computer is being used by the North Pacific Division of the Corps of Engineers to produce much of the data required in its current review of the 1950 "308" report on the Columbia River, scheduled for October, 1957, completion.

Using manual methods for the 1950 report, only one multipurpose multiproject system for the Columbia could be analyzed. With the computer, 10 different systems, comprising 40 to 60 separate projects, are being studied. And today's analyses are more complex, involving the interrelationship of thermal with hydro power. The computer has been producing in 1½ minutes what would require 3 hours by non-electronic methods.

The computer is proceeding in much the same manner as river systems have been analyzed by hand. Curves and parameters of proposed projects are combined with flow data and multipurpose demands. One advantage other than rapidity of operation is that the computer is permitting more mathematical preciseness.

CLOW BELL-TITE CAST IRON PIPE

costs less to buy, less to lay!

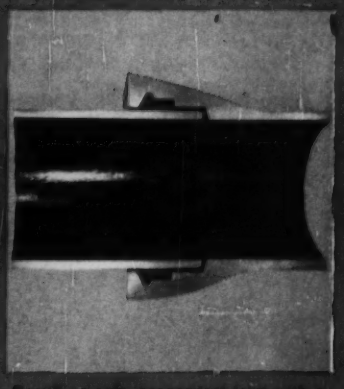
Assembly is simple. First, the joint is wiped clean.

Second step—insert gasket as shown into groove in bell.

Third—apply thin film of special lubricant to the gasket.

Next—push home the spigot, first centering plain end in bell.

No bell holes are required. Installation is very rapid.



Result—a safe, economical joint with a tight, permanent seal.

The NEW CLOW BELL-TITE cast iron pipe joint is a rubber seal joint that requires NO bolts, NO nuts, and requires NO wrenches to lay. It takes less time to install. It costs less to buy. Here's economy PLUS.

The Underwriters' Laboratories, after testing the joint, have approved its use for water working pressures up to 350 psi. CLOW BELL-TITE pipe barrel meets all quality provisions and physical requirements of all applicable ASA, AWWA, and/or Federal Specifications for cast iron pipe.

SINCE 1878

JAMES B. CLOW & SONS, INC.

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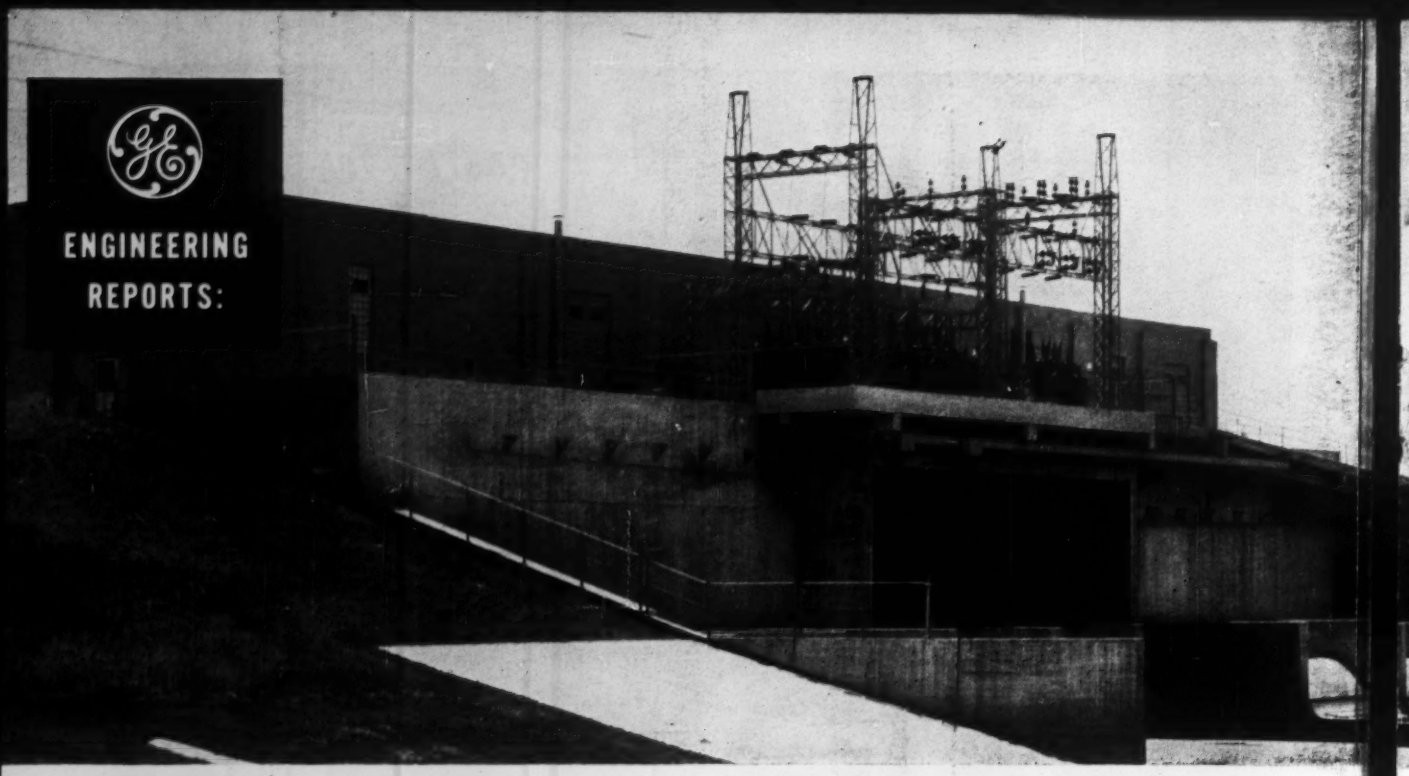
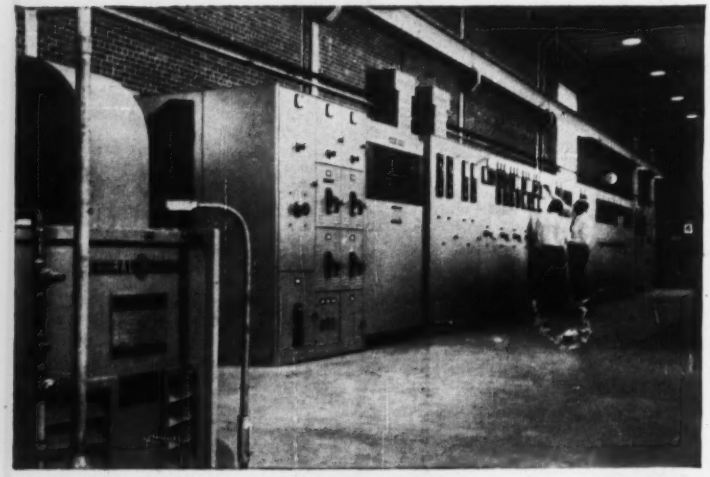


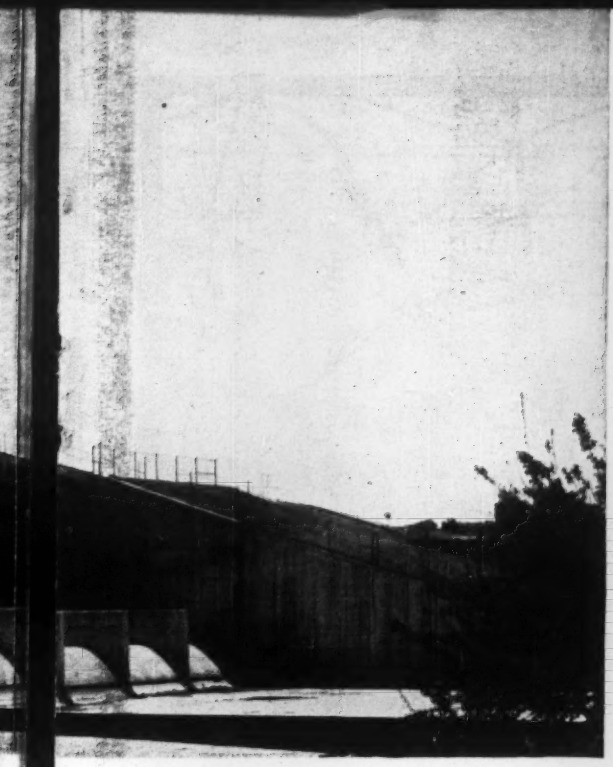
NEW BEARGRASS CREEK PUMPING STATION forces flood waters from Creek into Ohio River. Outdoor General Electric substation (center) supplies power to seven Worthington pumps which force 2,167,000 gallons per minute at a 32-foot head. At flood stage, the center gate is closed and surplus water is pumped through syphon into Ohio River at right.

SIX GIANT SYNCHRONOUS MOTORS drive pumps located beneath floor. General Electric engineers designed these 3000-hp motors to provide reliable power for pumps to meet emergencies as they arise.

WORKING OUT DISTRIBUTION PROBLEMS are engineers from Corps of Engineers and G-E Project Engineer. From left, E. E. Pontrich, S. M. Bailey, and W. A. Turner of Corps, and W. O. Lewis of General Electric are shown discussing electrical apparatus at station.



COMPACT, EFFICIENT unit substation brings power close to load, integrates control of related equipment. G-E metal-enclosed low and medium voltage switchgear and transformers help the system meet emergencies.



New Beargrass Creek Project relieves flood threat in Louisville area

General Electric engineered electrical system helps pump flood waters into Ohio River

The rampaging waters of the Ohio River have caused flood damages exceeding $250,000,000 in the Louisville area during the past 15 years. Beargrass Creek, in the City of Louisville, customarily drains the eastern part of the City and then empties into the Ohio. Devastating property losses have been incurred when the Ohio, reaching its flood stage, has backed into Beargrass Creek and flooded the City.

But today the threat of floods in Louisville has been relieved with the completion of the Beargrass Creek project. Flood walls and levees rising 30 feet protect the City, and a new $5 million Beargrass Creek Pumping Station forces surplus water from the Creek into the Ohio when its height reaches dangerous proportions.

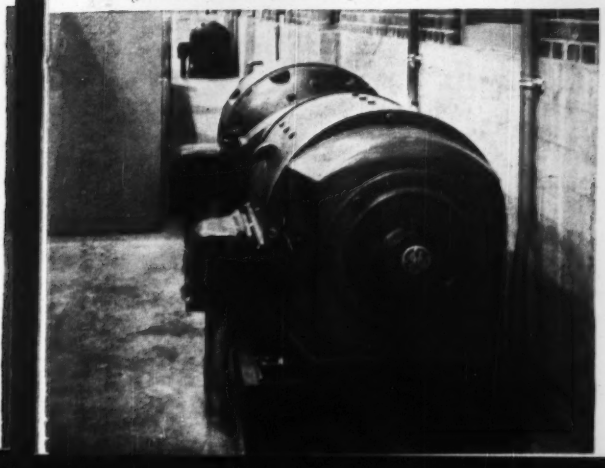
IN THE PUMPING STATION, SIX GENERAL ELECTRIC 3000-HP MOTORS drive giant Worthington pumps to force 114-million gallons of water into the Ohio every hour. This water is pumped at a 32-foot head. Reliable power for these motors is provided by a flexible General Electric power distribution and motor control system consisting of unit substations, transformers, switchgear, and circuit breakers.

G-E engineers worked closely with the Corps of Engineers, contractor C. F. Rule Construction Company, and Worthington Corporation to design and install this electrical system capable of protecting against Ohio River floods equal to the record flood of January, 1937.

This same complete engineering service and quality equipment is ready to work for you on your construction project. Call on G-E engineers early in your planning when they can be of most value. Contact your nearest G-E Sales Office or write General Electric Company, Section 664-44, Schenectady 5, New York.

*Reg. trade-mark of General Electric Co.

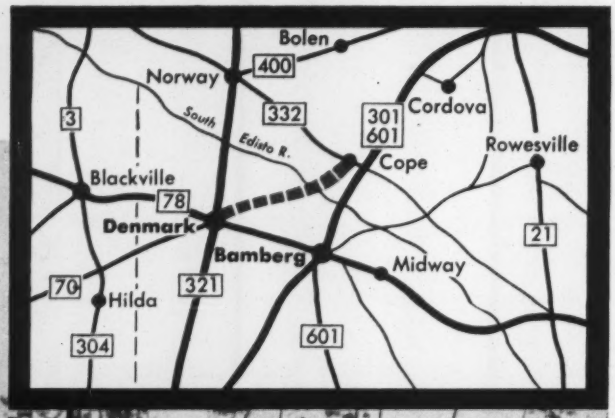
DEPENDABLE TRI-CLAD* motor-generator set supplies excitation power for motors. Ruggedly constructed, it requires little maintenance.



Engineered Electrical Systems for Waterworks

GENERAL ELECTRIC

Difficult grading and road-building job through a swampy area is being done by the Banks Construction Co. in Orange and Bamberg Counties, S .C. Banks has its own plant in Charleston and uses Esso asphalt in the manufacture of its asphaltic road mixes.



Banks Construction Co., Charleston, S. C.

reports long engine life, high operating efficiency with ESSOLUBE® HD

Banks Construction Co. has obtained outstanding results with Esso lubricants on a variety of construction jobs. Currently in use are at least 75 pieces of Banks equipment, including draglines, trucks and motor graders – equipment that is subjected frequently to the extra strain of mud and water.

Banks has found Essolube HD an excellent lubricant for all types of heavy-duty equipment because of its outstanding detergent characteristics – it keeps both diesel and gasoline engines running at top efficiency.

Esso Multi-Purpose Grease H is also doing a full-time lubrication job for Banks Construction. It is used in all equipment and has been found superior even to several special-purpose greases. It's economical, too, because it eliminates the need for stocking a large variety of greases.

Over the years, Banks has used Esso products *exclusively*. With complete records on all equipment, this contractor's experience testifies to the fact that Esso lubricants save time and money by doing a superior lubricating job!

For better results . . .

ESSO

PETROLEUM PRODUCTS

Esso products and services are available through Esso Standard Oil Company plants and offices in more than 400 cities and towns throughout New England, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, the Carolinas, Tennessee, Arkansas, Louisiana and the District of Columbia.

NSPE Honors Legare, Its First Secretary

T. Keith Legare, who for 35 years signed every certificate issued to a professional engineer and land surveyor in the state of South Carolina, was honored by the National Society of Professional Engineers at the time of his retirement June 30 as secretary of the State Board of Engineering Examiners.

Having served NSPE as its first executive-secretary in 1934 when the society was originally incorporated in South Carolina, Mr. Legare also served for 33 years as executive-secretary of the National Council of State Boards of Engineering Examiners—a post he still holds.

Further, he was an original member of Engineers' Council for Professional Development and served as a director of the American Society of Civil Engineers.

Mr. Legare received the honors of NSPE from its president, Garvin H. Dyer, at the annual meeting of the South Carolina Society of Professional Engineers, held in Charleston. Life Membership in NSPE went with society's award plaque; Mr. Legare was also named Engineer of the Year by his state organization.

As one of South Carolina's foremost professional engineers, Thomas Keith Legare came up the hard way with an educational background of night school and correspondence school courses. Beginning as a draftsman and rodman in 1900, he rose to be city engineer in Columbia, S. C., in 1906—a post he held for 14 years. Then, following a 10 year stint of consulting experience in New York City, he returned to Columbia and the South Carolina State Highway Department, where he was assistant construction engineer from 1931.

Now, at 73, Mr. Legare has attained the retirement age for state employees.

College Professor Named To Head N. C. Road Bureau

Willard F. Babcock, of Raleigh, a consulting engineer and a member of the civil engineering faculty of North Carolina State College, has been named as North Carolina's first director of highways.

Gov. L. H. Hodges has announced that Mr. Babcock will be recommended to the new seven member Highway Commission—which he will appoint soon—and will assume the top executive position in the State Highway Department on July 1, following upon the retirement of A. H. Graham, who is the present chairman of the outgoing commission.

Recent legislation enacted by the state legislature provides for reorganization of the Highway Commission and says that the director is to be appointed by the commission subject to approval of the governor.

The governor's recommendation is regarded as tantamount to appointment.

Under the reorganization act, even the name of the Highway Commission will be changed to eliminate the words "and Public Works."

The director of highways will be the chief executive officer of the department, supplanting the present commission chairman. The commission will be a policy-making body only, the director of highways having the job of carrying out the policies adopted and selecting and supervising the department's 15,000 employees.

A native of Boston, Mr. Babcock has spent most of his life in North Carolina. He joined the State College faculty as a 22-year-old instructor and has been on the faculty since, specializing in transportation practices and planning.

Columbia Basin

Inter-agency committee will have new chairman

Herbert C. Clare, sanitary engineer in charge, Pacific Northwest office, U.S. Public Health Service, has been elected chairman of the Columbia Basin Inter Agency Committee. He succeeds Brig. Gen. L. H. Foote, Division Engineer, Corps of Engineers, Portland, Ore.

Mr. Clare is the officer in charge of the Public Health Service's water supply and water pollution control program for the Pacific Northwest and is the representative of the Department of Health, Education and Welfare on the Columbia Basin committee. A commissioned officer in the USPHS. Mr. Clare formerly held the position of state sanitary engineer for Idaho, serving in its department of public health for a period of 18 years before being called to active duty by USPHS in 1955.

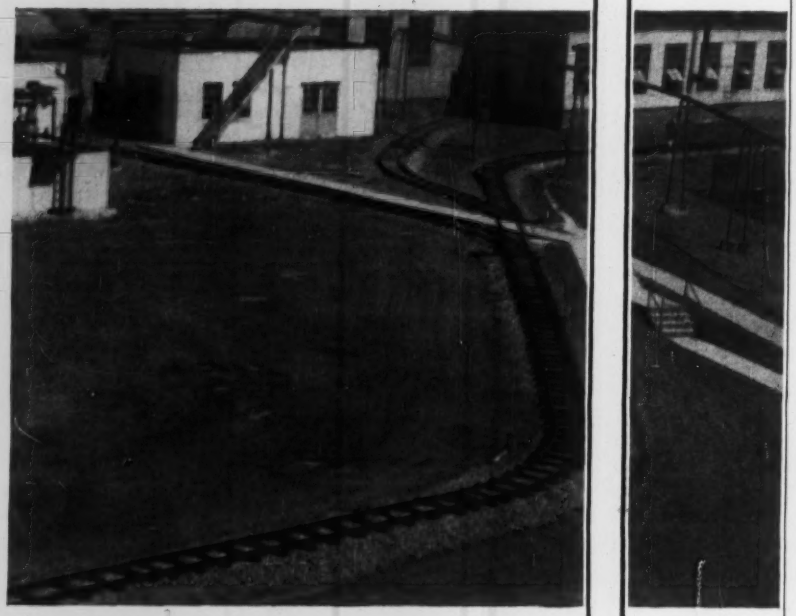
To assist the chairman, Jerome H. Svore of Bismark, N.D., has been called to active duty by the Surgeon General of USPHS. Mr. Svore, director of public health for North Dakota, has been with that state's health department since 1938.

California Water Agency Gets Changes in Engineers

Just before the California water plan was brought up short last week by legislative action—including refusal to appropriate funds for the state's water engineering organizations (ENR June 20, p. 24)—changes in the organization were announced by Harvey O. Banks, director of water resources.

Donald P. Thayer is now assistant division engineer in charge of the design branch, succeeding Theodore

Sign of Good Industrial Track Work!



★ *Experienced Engineering Service*

★ *Modern Production Facilities*

★ *Personalized, Efficient Attention to Your Needs*

Call, wire or write West Virginia Works, Connors Steel Division, H. K. Porter Company, Inc., Huntington, West Virginia.

HKP CONNORS STEEL DIVISION
H. K. PORTER COMPANY, INC.

Neuman, who becomes assistant division engineer in charge of the projects administration branch. Also, Charles Heikka was made project engineer in charge of the Feather River Project relocation program.

Mr. Thayer has been with the state since 1952, and when the department of water resources was created last July he was made principal engineer in charge of the dam design section.

Mr. Neuman, in state service since 1924, had been in charge of engineering studies on the Feather River Project from the time that work started in the 1940's.

Mr. Heikka first became acquainted with the Feather River Project when, as an engineer with the U. S. Bureau of Reclamation, he was assigned in 1949 to make a reconnaissance study, cost estimate and feasibility report for rerouting the Western Pacific Railroad around the proposed Oroville reservoir.

Dam Designer Joins Houston Consulting Firm

C. R. Marks has joined the staff of Lockwood, Andrews & Newnam, consulting engineers in Houston. Formerly, he was vice president of Ambursen Engineering Corp. and head of its Houston office.

Mr. Marks has directed engineering studies or designs on nearly 20 large dams, including the Whitney Dam and powerhouse for the Corps of Engineers. Others include the San Jacinto River Dam at Houston and Weseley E. Seale Dam, near Corpus Christi.

Before going to Texas, Mr. Marks designed bridges for the Santa Fe Railroad, spillways for the U. S. Bureau of Reclamation and various structures for the Tennessee Valley Authority. For four years, he worked on layout and structural design of eight large TVA hydroelectric plants. He is a graduate of the University of Tennessee.

G. A. Danes Appointed Yale Architectural Dean

Gibson A. Danes has been appointed dean of the School of Architecture and Design at Yale University. Now chairman of the Department of Art at the University of California in Los Angeles, he will take the Yale post in February.

Dean Danes is 46 years old. He holds degrees from the School of the Chicago Art Institute and Northwestern University. He earned a Ph.D. at Yale in 1948 after winning a Rockefeller Postwar Fellowship to continue his studies there. He has also studied in France.

(*M & J continued on page 86*)

Something special for Chicago....

A-M CONCRETE PIPE SPECIALTIES

Now nearing completion, the Congress Street Expressway extends west for about eight miles from downtown Chicago. Since most of the expressway is depressed below existing north-south streets, inverted siphons were required to supplement an existing and relocated 78-inch diameter combination sewer.

Two lines of 54-inch and one line of 24-inch diameter were constructed of reinforced concrete pipe in 12-foot lengths for the Cook County Highway Department. The smaller line will convey normal dry weather flow. During prolonged rainfall, when the existing 78-inch diameter sewer may flow full or under slight pressure, the two large pipe lines will also carry sewage under the expressway.

The reinforced concrete pipe and the Y-branches and bends were made to exact dimensions and the joints sealed with rubber gaskets by the American-Marietta Company.

Our technical staff will be pleased to assist you with your pipe problems.

Another example of PROGRESS IN CONCRETE

AMERICAN-MARIETTA COMPANY
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GENERAL OFFICES:
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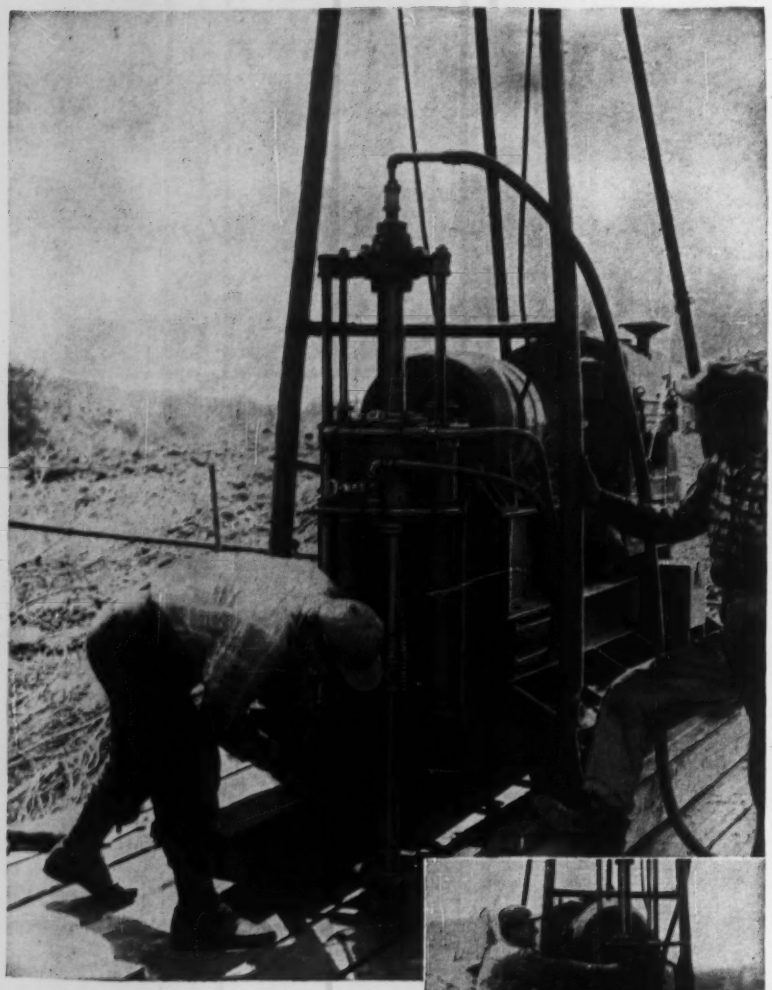
101 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS, PHONE: WHITEHALL 4-5600

YOU'LL KNOW WHAT'S THERE ...BEFORE YOU KNOW IT...



If you want to know what you're going to run into below the surface . . . and just what equipment you will need to do the work properly and save you money . . . your call for exploratory drilling should be aimed at SPRAGUE & HENWOOD INC. They have a wealth of experience and modern equipment ready to serve you. Well-trained personnel, adequate supervision and the latest in machinery, all tend to assure you the results you are looking for.

Don't just build without foundation investigation . . . find out what's down there, first . . . and let SPRAGUE & HENWOOD find it out for you . . . You'll know what's there, before you know it.

SPRAGUE & HENWOOD, Inc.
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BRANCH OFFICES: NEW YORK • PHILADELPHIA • PITTSBURGH • ATLANTA
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. . . Men and Jobs

New Supervising Architect Is Appointed for Illinois

John D. Jarvis has been appointed supervising architect for the State of Illinois. He succeeds Louis H. Gerding, who has resigned because of ill health.

Mr. Jarvis is a 1929 graduate of the University of Illinois. He studied in Europe under the Plym foreign architectural scholarship from the University of Illinois.

After ending an association with George E. Ramey & Associates, Champion, Ill., architects, he opened an office for private practice in Chicago in 1936. He has served as special consultant to the Portland Cement Association in the field of plain and reinforced concrete design and construction.

E. L. Armstrong Is Named First Utah Road Director

Ellis L. Armstrong of Massena, N. Y., has been named the first director of the reorganized Utah State Road Commission.

The commission was recently changed from a full-time paid agency to a part-time unpaid group, with a full time director.

Mr. Armstrong, a native of Cedar City, Utah, is a civil engineering graduate of Utah State Agricultural College, now called Utah State University, at Logan.

Before taking up his present post in Salt Lake City, Mr. Armstrong was an engineer with Uhl, Hall & Rich, consultants on the St. Lawrence power project in New York State.

Careers

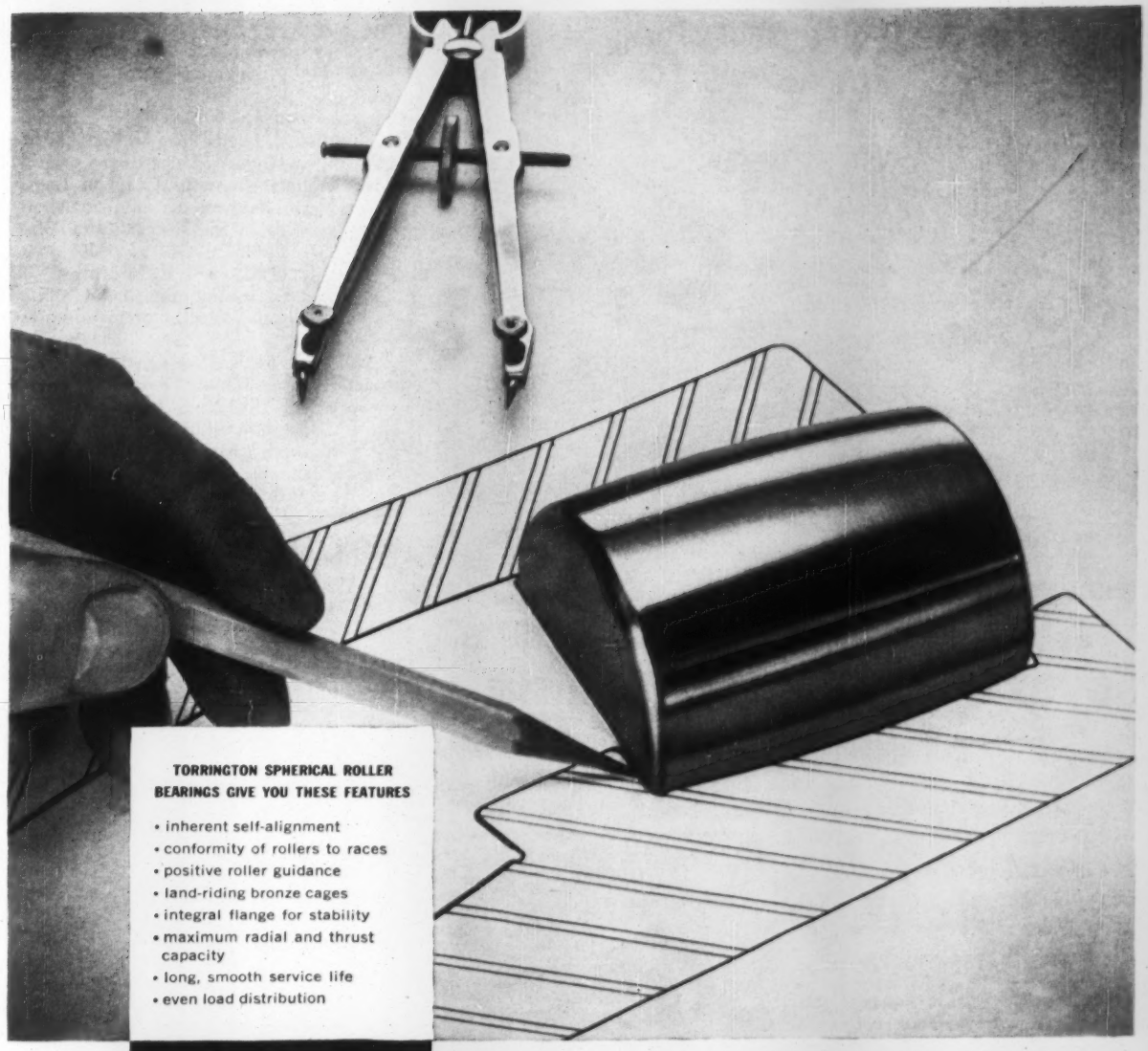
Government

Alfred T. Neale, formerly associate engineer for the Washington State Pollution Control Commission, has been appointed acting director to succeed **E. F. Eldridge,** who resigned to become Northwest consultant to the U. S. Public Health Service.

Lt. Col. J. Newton Cox is to be the new district executive, Portland, Ore., district, Corps of Engineers. He succeeds **Lt. Col. Joseph F. Garbacz,** who has been appointed deputy district engineer.

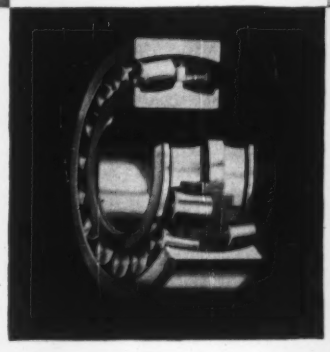
William L. Bryan, civil engineer with the St. Louis District, Corps of Engineers, retires after 45 years service with the Corps.

Grover C. Powers has been named interstate engineer for the Montana Highway Department. Mr. Powers, who has been special assignment engi-



TORRINGTON SPHERICAL ROLLER BEARINGS GIVE YOU THESE FEATURES

- inherent self-alignment
- conformity of rollers to races
- positive roller guidance
- land-riding bronze cages
- integral flange for stability
- maximum radial and thrust capacity
- long, smooth service life
- even load distribution



Mated perfectly - for life!

Make a point to notice the roller end and center guide flange in a Torrington Spherical Roller Bearing. The perfect mating there means a smoother, longer bearing life.

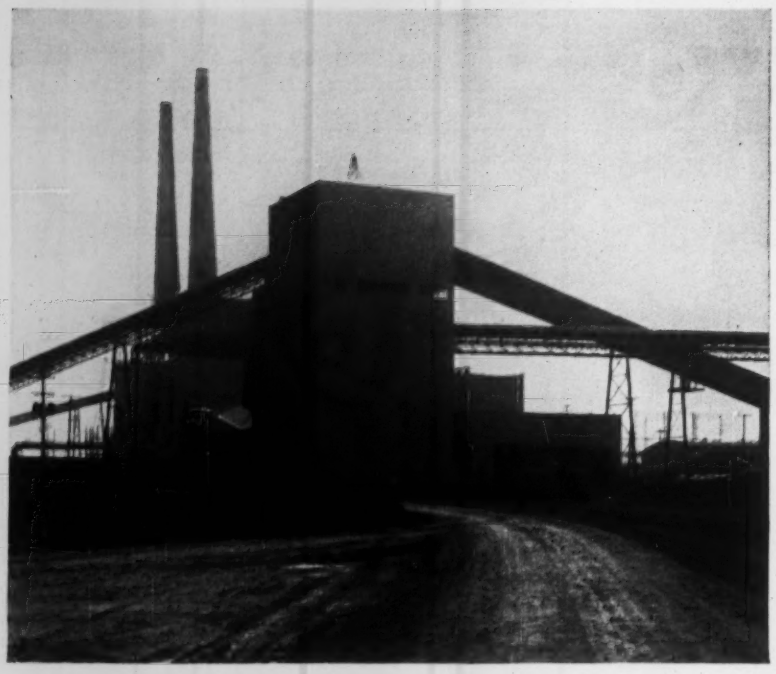
Roller end and flange surfaces alike are ground to a common spherical radius centered on the common vertex of bearing axis and roller axis. Under all load conditions, the rollers bear lightly but constantly against this flange. This guides the roller positively with minimum friction and prevents skewing. Stress concentrations leading to early failure are avoided, so the bearing will serve you many good turns longer.

This is the kind of feature Torrington builds into its bearings out of its experience with all major types serving in all kinds of equipment. Care for such details is matched only by our care in mating the *right* bearing to the *right* job. In this, your Torrington representative is an expert: call on him when you need help. *The Torrington Company*, South Bend 21, Ind.—Torrington, Conn.

TORRINGTON BEARINGS

District Offices and Distributors in Principal Cities of United States and Canada

SPHERICAL ROLLER • TAPERED ROLLER • CYLINDRICAL ROLLER • NEEDLE • BALL • NEEDLE ROLLERS • THRUST



Moves a million-ton mountain of coal a year!

One of the largest in the U. S., this system depends on over 7,000 feet of Quaker Rubber belting to keep the coal moving.

PROBLEM: The Detroit Edison Company needed three separate conveyor systems to carry coal into their River Rouge power plant: (1) dock to storage, (2) dock to breakers to plant, (3) storage to breakers to plant.

SOLUTION: Quaker engineers and the Quaker distributor's men, working with engineers of the power plant, suggested the use of a belting designed for high lifts and long center distances. Over 7,000 feet was installed.

RESULT: The three conveyor systems work smoothly and efficiently, carrying coal into the plant at the rate of one million tons a year.

YOUR PROBLEM: Whatever your conveyor needs, whatever your industry—there's a Quaker Rubber Belt (or Hose) of the *right* construction to handle the job safely and economically. Quaker engineering service is available for the asking.

To make sure 7,000 feet of Quaker Rubber conveyor belting (available in 48", 60" and 72" widths) was properly installed, splicing and vulcanizing of the belting was supervised by a Quaker Rubber specialist.

For your free brochure on conveyor belting, write your nearby Quaker Rubber distributor, or:

H. K. Porter Company, Inc.,
Quaker Rubber Works,
Philadelphia 24, Pa., or
Pioneer Works, Pittsburg, Calif.

HKP QUAKER RUBBER DIVISION
H. K. PORTER COMPANY, INC.

neer on the interstate system, has been with the Highway Department since August, 1956. Prior to that time he was associated with the Ohio Turnpike Commission, Peter Kiewit Sons, the Wyoming Highway Department as resident engineer, and the Corps of Engineers. He received his civil engineering degree from the University of Wyoming in 1938.

Burl A. Parks will resign July 1 as city-county planning engineer of Memphis to become director of planning at Richmond.

R. H. Tittle, of Springfield, an engineer with the Illinois Division of Highways since 1921, has been promoted to the post of assistant chief state highway engineer. Mr. Tittle succeeds **Elmer R. Knight,** also of Springfield, who is relinquishing the office because of a recent illness, but he will continue with the division serving in an advisory capacity.

Albert Larsen, assistant chief engineer in charge of construction for the Pennsylvania Department of Highways, has been named to head a new field construction force, which will review and substantiate revisions of contracts that may be necessary during construction. Engineers assigned to the field divisions are: **I. E. Penrod, John J. Kelmar, Michael C. Daumit** and **Charles H. Miller.**

Comdr. Joseph V. Jones, CEC, USN, has taken command of Mobile Construction Battalion Seven, currently deployed on Barbados Island in the British West Indies. Commander Jones, a civil engineering graduate of Manhattan College, entered Naval service in 1942.

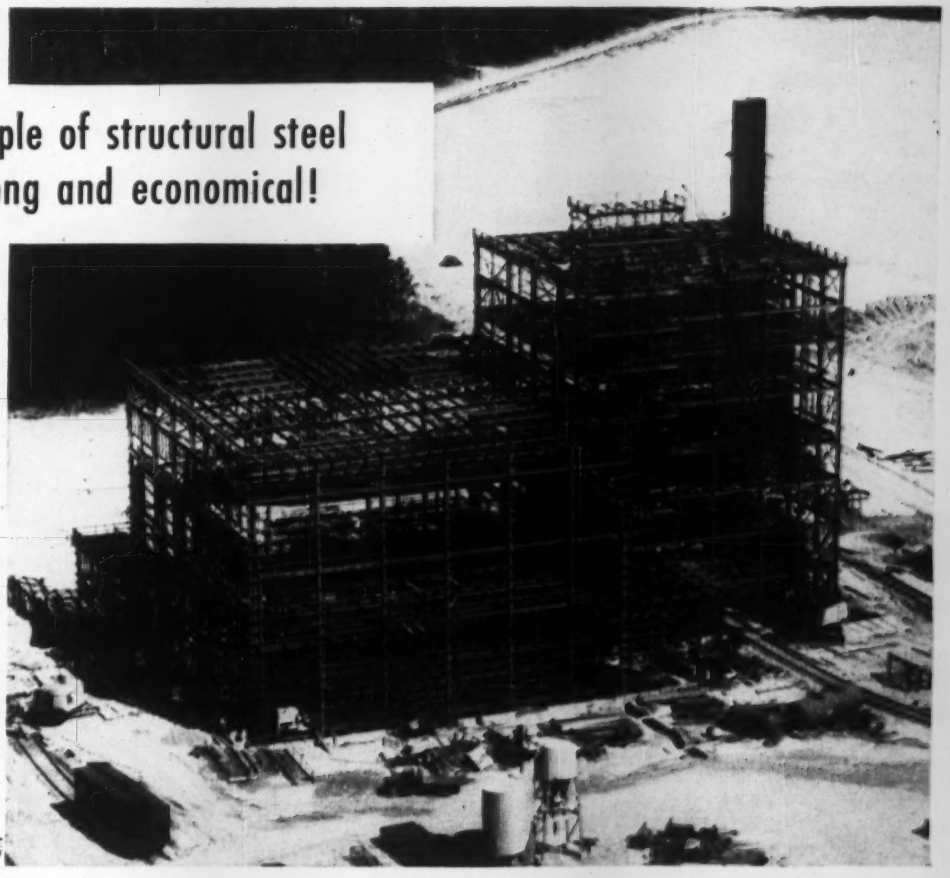
Robert B. Livengood, director of public works for Coronado, Calif., resigns to become city manager of Banning.

James R. Gilbreath is named assistant director, Argonne National Laboratory, Lemont, Ill., and will help administer the laboratory's research and development program. He holds both Bachelor and Master's degrees from the University of Washington and a Ph.D. from the University of Chicago. He joined the Argonne staff in 1944.

Robert S. Calkins is transferred by the Soil Conservation Service of the U. S. Department of Agriculture from Upper Darby, Pa., to Lincoln, Neb. He leaves the post of design engineer in the Pennsylvania engineering and watershed planning unit to become materials engineer at the Lincoln soils mechanics laboratory. From 1948 to 1950, Mr. Calkins served as executive secretary of the National Association of Soil Conservation Districts.

(*Men and Jobs continued on page* 80)

Another example of structural steel at work...strong and economical!



Mississippi Power Company Plant, Gulfport, Mississippi.

"Power House" Team for Power House (Steam)

Working as a "team," Ingalls offers specialized service in the steel fabrication, plate work and erection of every type of structure.

Here you see a 75,000 kw power house under construction for the Mississippi Power Company at Gulfport, Mississippi. Working as a team, the Ingalls Iron Works and its Birmingham Tank Division fabricated more than 2,000 tons of structural steel and plate work which was erected by Ingalls Steel Construction Company.

Ingalls has served 46 of the nation's leading power companies in 22 states. In many instances, the Ingalls plants have worked as a "team". In other instances, each plant has worked independently, furnishing either fabricated steel, plate work, or erection.

If you are contemplating a new structure, call on Ingalls—for 47 years fabricators of steel.

The Ingalls Shipbuilding Corporation
Shipyards: Pascagoula, Mississippi; Decatur, Alabama
Sales Offices: New York, Chicago, Philadelphia, Washington, Houston, New Orleans, Atlanta

The Ingalls Steel Construction Company
Sales Offices: New York, Chicago, New Orleans, Pittsburgh, Houston, Atlanta

The Ingalls Iron Works Company
Sales Offices: New York, Pittsburgh, Chicago, Houston, New Orleans, Atlanta

Birmingham Tank Company
Sales Offices: New York, Pittsburgh, Chicago, Houston, Atlanta, New Orleans, Pascagoula

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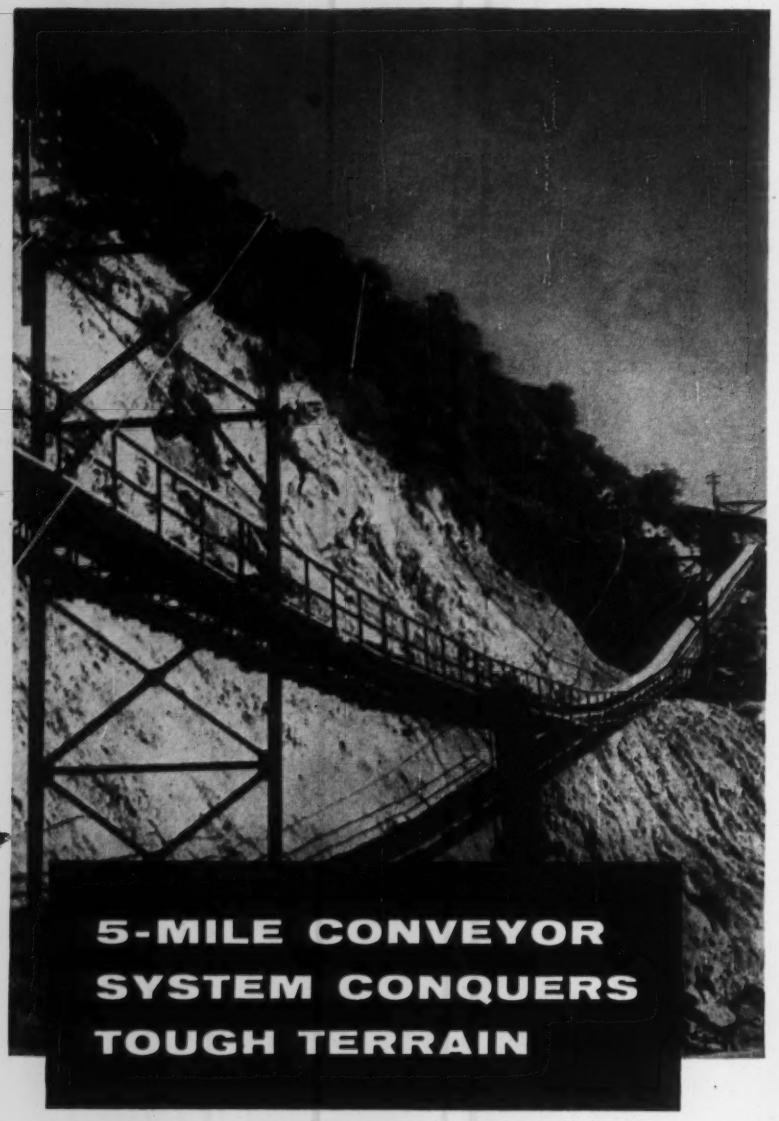

5-MILE CONVEYOR SYSTEM CONQUERS TOUGH TERRAIN

To build India's huge Bhakra Dam, sand and gravel must be brought over three miles of mountainous terrain. In one section a suspension span supports a 1700-ft. long, 36" wide belt conveyor which carries 750 tons per hour at 485 FPM up a 107-ft. lift. Another two miles of belt conveyors move aggregate through processing operations.

Equipment, including 51 conveyor units, 25 speed reducers, vibrating equipment, and other machinery, was designed and manufactured by Hewitt-Robins. To find out how H-R products and services can help you, consult your classified telephone directory for the nearest H-R representative, or contact Hewitt-Robins, Stamford, Connecticut.

HR **HEWITT-ROBINS**

CONVEYOR BELTING AND IDLERS . . . POWER TRANSMISSION DRIVES
INDUSTRIAL HOSE . . . VIBRATING CONVEYORS, SCREENS & SHAKEOUTS

. . . Men and Jobs

C. E. Humphrey has been appointed deputy executive director of the Chicago Housing Authority, and **Albert C. Gray** has been named director of development.

Business

Edwin K. Borchard has been appointed technical consultant for the Keystone Portland Cement Co. **John F. Hall** has been named manager of the technical department in Keystone's New York City office.

E. A. Miller has been elected a vice president of Fenestra, Inc., Detroit. He will be in charge of the company's new building products division.

Claude F. Horton has been named executive vice president of Construcciones Collins de Venezuela, S. V. Collins, president, has announced. Mr. Horton also will become a member of the board of directors of the firm.

M. Harvey Slocum, now project manager on Bhakra Dam in India, has become associated with the dam and power plant division of Morrison-Knudsen Co., Inc., as consultant on project planning and construction.

William D. Milne, former Louisville District Engineer, Corps of Engineers, moves up from vice president to president of Kentucky Stone Co., Louisville.

John F. Michel, former lieutenant colonel in the Corps of Engineers, is appointed to the civil engineering staff of Rader & Associates, Miami, Fla.

John F. Hoffmeister, for the last 10 years director of engineering for International Milling Co. of Minneapolis, has joined the force of Alden Elstrom Associates, Minneapolis, consulting industrial engineers.

William Denny, executive vice president of Merritt-Chapman & Scott Corp. in charge of the company's Construction Department, has been elected president of M-C & S' two New England subsidiaries—Savin Construction Corp. and Whaling City Dredge & Dock Corp.

A. M. Westenhoff, recently retired engineer of construction for the New York Central Railroad, is now an associate partner in the firm of Plumb, Tuckett & Pikarsky, Gary, Ind., consulting engineers and architects. At the same time, **Ernest R. Seymour,** structural engineer with the firm, has been named an associate partner, in charge of structural work.

A. S. Marvin has been appointed chief engineer of the American Bridge Division of the U. S. Steel Corp., succeeding the retiring **C. E. Webb.** A civil engineering graduate of the University of Colorado, Mr. Marvin joined American Bridge Division in 1924.

Introducing the greatest advancements made to date in tractor mounted backhoes

Sherman Products announces *all new* digger for Ford Tractor with increased output to speed digging and reduce costs. New features make it faster with less maintenance and longer life.

WHAT you are really buying when you purchase a backhoe is not a group of parts but the capacity to dig holes at the lowest possible cost. This means you need a fast digger with low maintenance expense.

Now, Sherman presents an *all new* power digger that meets these requirements! It is faster, will outlast and requires less maintenance than any comparable backhoe.

Here are the reasons why it is faster:

• **Breakaway capacity of 9000 lbs.—greater than any comparable backhoe.** • **Fast and powerful** because short hydraulic lines reduce friction power loss. And the exclusive pump drive in combination with the Sherman Planetary Step-up Transmission contributes to greater speed than conventional systems, as does the outstanding pump pressure of 2000 psi. • **Wide work radius and long reach**—an *uninterrupted* arc of swing of 188°, a 12 ft. reach below grade, a loading height of 9 ft. 2 in., an 18 ft. reach from axle at grade, a 15 ft. 8 in. length of excavation from one tractor position. • **Steady hold on sloping or uneven ground** because the hydraulic stabilizers, individually controlled, give both lateral and angular support with an 8 ft. spread and a 12 in. by 14 in. foot plate for maximum ground contact. • **Dismounted in a few minutes** by simply removing six pins and four bolts. • **Efficient, all purpose shovel** with quick adjustment for straight walls or high loading; full rollback for heaped, non-spilling loads; tapered side cutting edges to prevent binding; replaceable teeth. • **Comfortable, adjustable seat** and full, anti-skid deck to permit leg position changes.

Here are the reasons for lower maintenance:

• **Heavy-duty main and swing frames** of steel plate, weldment construction. • **Full length sub-frame,** box construction. • **Reinforced boom,** "stress-design", box construction with crowd cylinder operating inside for complete protection. • **Heavy cable chain** couples the twin, single acting swing cylinders to swing sheave. • **Reinforced dipstick** of "stress-design", box construction. • **Oversized hydraulic reservoir** for maximum oil cooling. Its central location and independent suspension eliminate possibility of leaks due to operating stresses.

Don't take our word for it. Put the Sherman on any job and *clock it* with a stopwatch. Prove to yourself that the Sherman saves you money.

For details of this new Model 54F, write for Bulletin No. 1466

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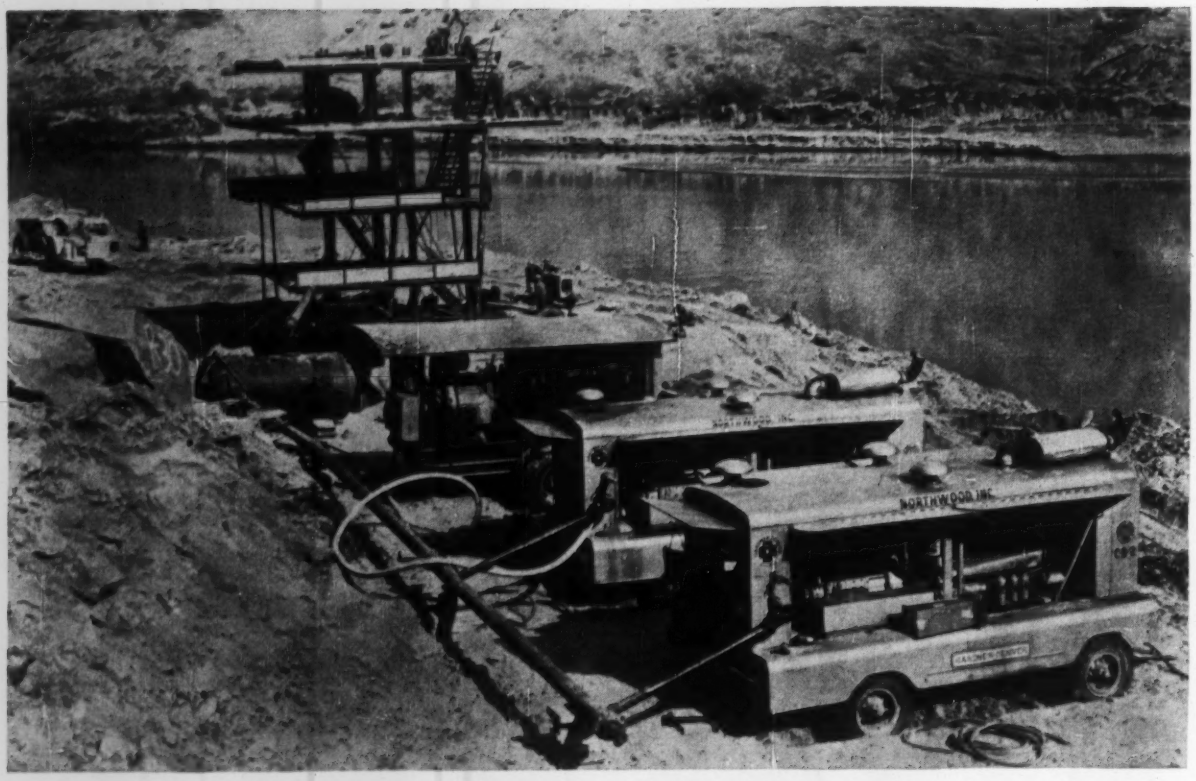
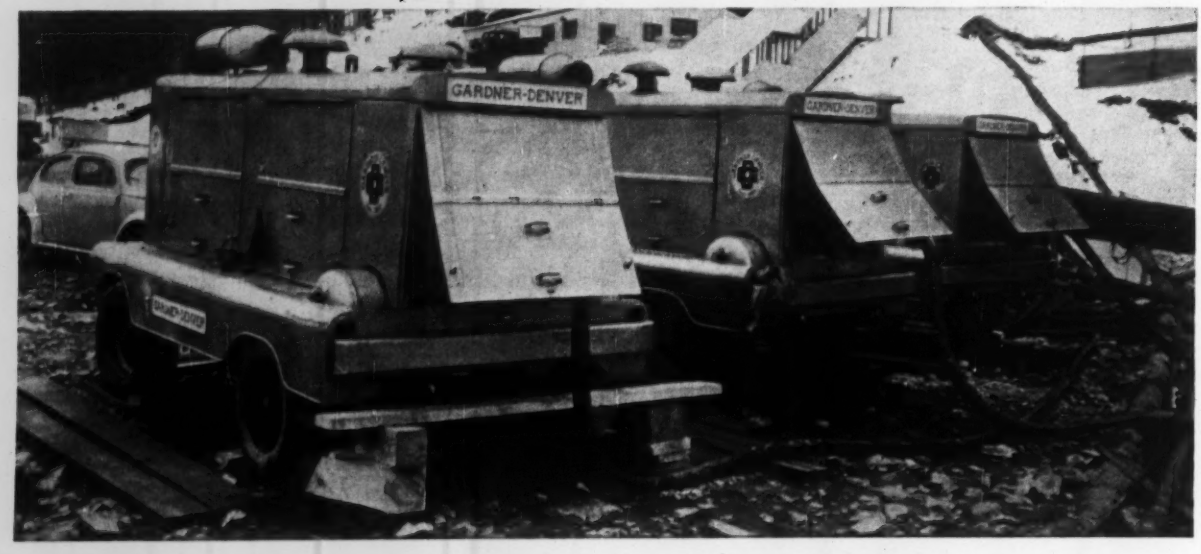


Gardner-Denver Rotary 900's delivering air for drilling on dam project.

Gardner-Denver Rotary 600's supplying air on Cannonsville Tunnel project.



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OIL SEPARATOR . . . minimizes oil consumption.

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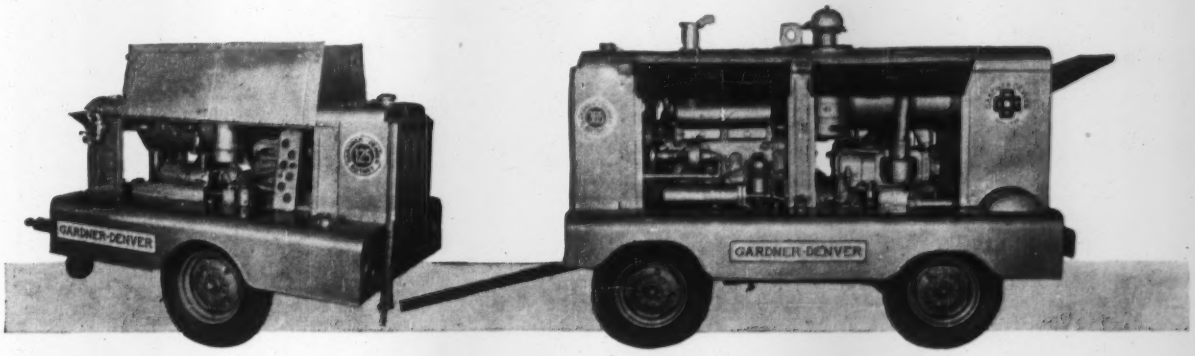
SMOOTH PERFORMANCE . . . delivers air without pulsations or vibration.



New Gardner-Denver Model RP125 — New Gardner-Denver Model RP365-D

These two new Gardner-Denver portables have water cooling, clutch, "THRIFTMETER"® control and all the design features of the bigger Gardner-Denver rotaries. Write for bulletins.

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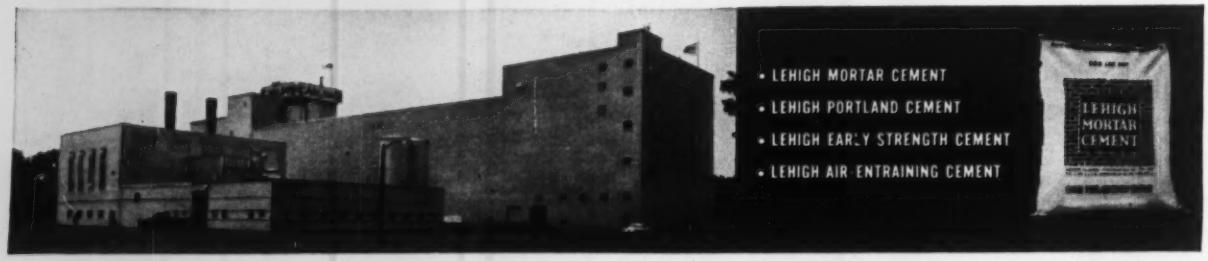


Pond Disposal

Use of open lagoons for sewage disposal increases

The central plains of Canada are the scene of great interest in open lagoons for raw sewage disposal. About 65 lagoons are now in operation in Alberta, Saskatchewan and Manitoba.

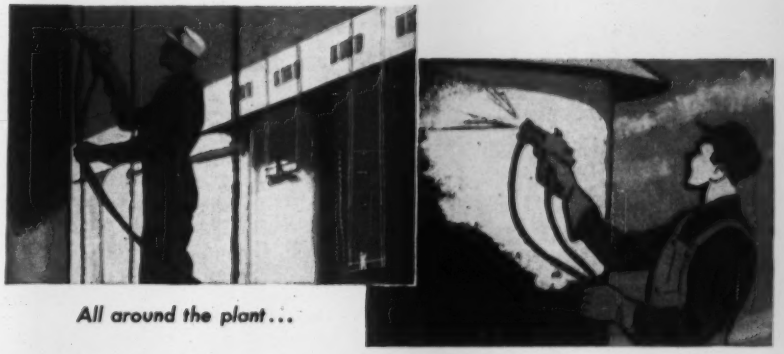
Four years of operation have proved to the satisfaction of local and provincial sanitary engineers that lagoons, or oxidation ponds, are eminently satisfactory for medium-sized communities and even individual farms. Even large cities, such as Regina (Saskatchewan) with close to 100,000 population, are exploring the feasibility of large lagoon installation (ENR Nov. 15, 1956, p. 64).

Sanitary engineers in the Canadian great plains are in general agreement that lagoons provide the answer to fiscal as well as physical problems of public sanitation. The long hours of sunlight, brisk winds and a high daily rate of evaporation make this area ideal for open pond disposal. And the exceptionally low capital, maintenance and operating costs of lagoons complete a happy situation.

A typical Canadian situation is found at Boissevain, Manitoba, which installed a five acre lagoon in 1955. It paid $4,000 for an installation serving 1,300 persons. The lagoon has been achieving better than 80% reduction in biochemical oxygen demand. Other Canadian installations have cost as high as $2,000 per acre.

Practically all new and planned sewage disposal installations for villages and small towns across the prairies now call for lagoons, most designed to receive raw sewage. Construction is expected to begin this summer on the biggest oxidation pond yet biult in the area, a 122 acre lagoon for the city of Swift Current (11,000 population) in Saskatchewan. The largest in operation now is in the Alberta city of Grande Prairie with 6,000 persons being served.

• **Theory** – Sewage lagoons operate on principles that are mechanically simple but biologically complex. The basic requirement is a shallow pond of such depth and area that maximum benefit is gained from the symbiotic growth of algae and bacteria. During spring, summer and fall, tiny algae thrive in the oxidation ponds. They take carbon dioxide, ammonia, phospherous and other elements from the decomposing protein of the raw sewage to synthesize their own protetin material. In the process



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. . . Research

they emit free oxygen into the water. Aerobic bacteria in the sewage thrive upon this oxygen in decomposing sewage protein.

When the pond freezes in the late fall the algae die and the summertime action ceases. The pond becomes primarily a storage basin with the characteristics of a septic tank, but with the odors locked under thick ice. Some further decomposition of sewage proteins continues through the winter.

The critical period arrives when the ice breaks up in the spring. In most regions of the Canadian Great Plains, ice breaking occurs quickly and the aerobic action begins within a week. However, if the lagoon has not been designed or constructed properly, if water level is too shallow or too deep, or if the ice breaking is prolonged, the imprisoned odors may become a nuisance.

• **Design** – Canadian engineers have drawn heavily on North Dakota's experience with sewage lagoons. But, in several respects, design criteria for Canadian ponds differ from standard North Dakota specifications. Most of these differences, though, are matters of tolerances, not basic ones. Several Canadian engineers, notably T. H. Lackie, acting director of Manitoba's Public Health Department, and M. H. Prescott, Saskatchewan Public Health Engineer, finds the Dakota acreage requirements too high. North Dakota requires about 10 acres per 1,000 population served. Although Messrs. Lackie and Prescott subscribe to the 120 days minimum storage capacity the Dakotans require, they feel five acres per 1,000 persons is a more realistic requirement.

However, J. G. Schaeffer, Saskatchewan Director of Sanitary Engineering, prefers to think of lagoon design as governed, not by an acreage formula, but by the BOD per acre loading the retention time provided by the lagoon. He has found that an area of 3.5 acres provides satisfactory treatment to a loading of 50 lbs of BOD per acre per day (from a population of 1,000).

Canadian lagoons are generally quite shallow. Mr. Prescott notes that a three foot depth optimum for summertime aerobic action, but not four or five feet depth, should be maintained during winter to provide for sewage storage between the lagoon floor and the ice covering. Therefore, liquid level regulation is desirable. It has also been found in Saskatchewan that a foot or two of liquid beneath the ice greatly speeds up melting of ice in the spring and facilitates quick resumption of odor free action.

(Continued on page 97)

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COMMENT
from the
BUTLER ENGINEER

Is "Capitalist" a Dirty Name?

Sure there are faults and inequities in our capitalistic system—but the point is, as a people we can do something about it.

One thing that should have been done, and long ago, is to teach our respected government the difference between "depreciation" and "obsolescence". As a manufacturer of ready mix concrete or a concrete highway, your interest is as vital as ours; we as a manufacturer of the equipment you use.

Allowable reserves for depreciation are, in many cases, completely unrealistic. Your Roadbuilders Plant or Ready Mix Plant will last for 10 to 14 years — or so says the Government. Would you try to compete using the exact plant you bought when your beautiful teen-age daughter was a pink pearl in her bassinet?

Not to inject the horrible word "advertising" in this discussion — but as a case in point: two years ago we brought out the Butler 0-1-0 Roadbuilders Plant. It made everything before it absolutely obsolete. And this year we've brought out the TX4 which completely obsoletes the 0-1-0 . . . Yet Government says "your 0-1-0 cannot be written off until 1972".

And it's the same thing with the equipment we install in *our* factory to make the equipment *you* use. But Government would lose taxes! Nuts! If equipment *could* be written off in one year Washington wouldn't lose a penny, because the year following, we'd have no depreciation write-off. Meantime you and we would be able to buy the best, newest and most cost-cutting replacement.

Construction publication editors—please note. This subject deserves support.

Regards,

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

North Dakota engineers generally recommend that a lagoon installation be not less than 800 yards from a dwelling. However, some installations in Manitoba and Saskatchewan are not more than 400 yards distant.

The question of building downwind has not been critical in Canada since odors have been little problem. Mr. Lackie feels that the downwind criterion should not preclude an otherwise excellent upwind location. He also reports no odor problems for any Manitoba lagoon, but there have been a few ponds in Saskatchewan where the aerobic cycle was slow in getting started in springtime and unpleasant odors prevailed for a few days.

An important conclusion from U. S. lagoon experience is that they function best in an area where there is a positive net evaporation throughout the year. However, Canadian engineers generally feel that failure to meet this criterion through the entire 12 months should not bar construction. This, they believe, is particularly true in resort areas where population and evaporation increase coincidently.

U. S. experience indicates that floors of lagoons should be conditioned so that the percolation into the ground is not more than $\frac{1}{8}$ to $\frac{1}{4}$ in. per day. Mr. Schaeffer recommends that design be based on the assumption of no seepage; any that does occur is a safety factor. But seepage can have certain advantages, points out H. L. Hogge, Alberta sanitary engineer. It can increase the capacity of a pond if controlled so that the pond can build up to the desirable 3 ft liquid depth.

Some North Dakota engineers prefer lagoons to be square shaped, but Mr. Lackie points out the advantages of some circular ponds built in Manitoba. He claims these permit a maximum amount of wind action, for aeration and carrying off of odors and feels that circular shapes also cause the least amount of damage from wall errosion.

The Canadians, along with engineers in the U. S., still have much to learn about lagoon operation under various conditions. Mr. Hogge has found that algae feed best upon raw sewage rather than partially treated sewage such as comes from Imhoff tanks in several Alberta communities. Loamy soil was not disposed in some early installations and appears to have encouraged harmful emergent vegetation. On the other hand, a pond floor of sandy soil has led to failure. And Mr. Hogge reports that waste discharges from a cheese factory in Alberta played hob with the delicate relationship between algae and bacteria in the town lagoon.

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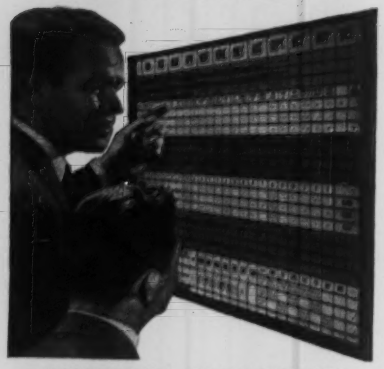

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Unit Prices

Water Supply for Range Station, Tennessee

This $31,564 water supply system at Briceville, Tenn. for the U. S. Engineers' Cambria Range Station will include pump house, deep well pump, water softener and hypochlorite feeder and 4,500 lin ft of 4 in. pipe. Lawrence W. Doty, resident engineer, McGhee-Tyson Air Force Base is the engineer.

Minimum wages range from $1.675 for common laborers to $2.875 for construction machine operators.

Bidders include:

1C	Eller Bros., Inc., Madison, Tenn	$31,564
2	Albert Roskopk, Lake City, Tenn	32,873
4	Bush Building Co., Nashville, Tenn	44,242
EE	District Engineer, U S Army Engr Dist, Nashville	31,512

Bids: 5-28-57 Items	Unit	Quantity	Unit Prices 1C	2
Pumphouse, complete a	ls	job	$15,000	$18,488
Concrete, additional	cy	5	80 00	75 00
Grading	ls	job	300 00	200 00
Excavation, borrow	cy	70	4 00	1 00
RR Xing & barrier	ls	job	340 00	500 00
Excavation, rock	cy	20	12 00	15 00
Pipe, steel, 8"	lf	32	6 00	4 00
Water line, 4"	lf	4,530	2 60	2 00
Connect to exist water lines	ls	job	100 00	150 00
Gate valve & box	ls	job	80 00	150 00
Check valve & box	ls	job	200 00	175 00
Air relief valve & box	ls	job	230 00	125 00
Insulate, exposed 4" wtr line	ls	job	300 00	150 00
Pipe, culvert 18"	lf	16	5 00	8 00
drain, 4" clay	lf	36	2 00	1 50
Chain link fence & gates	ls	job	800 00	430 00
Surfacing, crushed stone	t	40	3 00	27 00
Honeysuckle planting	Msf	2	60 00	75 00
Downguy & anchor	ea	5	72 00	101 00
Pole, Cl 4 45 ft	ea	1	145 00	138 00
35 ft	ea	1	110 00	103 44
Secondary wire, 1/c #6	lf	320	0 20	0 173
Base wire, #6 ACSR	lf	1,000	0 15	0 134
Insulator Assembly, single	ea	10	5 50	10 70
Secondary racks	ea	4	7 00	17 76
Remove exist pole	ls	job	50 00	42 72

Completion schedule: 60 calendar days
Liquidated damages: $50 per day
a Includes 4-in CI drain pipe, water softener, chlorinator, brine tank, pump, casing, piping, and accessories.

Amvet's Memorial Highway Relocation, Massachusetts

With one uncomplicated grade separation and no complex design features that would affect costs this 1.432 mile relocation of Route 138 in the Town of Randolph, Mass. went to Old Colony Construction Company of Quincy at $848,448. E. J. McCarthy is chief engineer, Department of Public Works, Commonwealth of Massachusetts.

This is a divided highway with two 48 ft roadways of 2½" bituminous concrete pavement, Type I-1 over a 4½" crushed stone base course which is over a 12" gravel foundation 38 ft wide. In addition shoulders 10 ft wide are 2½" BMA over 4½" of crushed stone on 12" gravel foundation.

Concrete compressive strength is 3,000# for class A and D, 2,500# for class B, all at 28 days. Class A minimum cement content is 560 lb, class B, 500 lb and class D 620 lb.

Minimum wages range from $2.35 plus 7¢ fringe benefit for common labor to $3.75 for master mechanic. The common labor rate, to be escalated April 1, 1958 to $2.50 plus 7¢ applies also to asphalt rakers, stone spreaders and pipe layers. Carpenters started at $2.85 plus 15¢ but moved up to $3.05 plus 15¢ on June 1. Tractor operators get $3.15, shovel and crane operators $3.50.

Bidders include:

1C	Old Colony Construction Co. of Quincy, Quincy, Mass	$848,448
2	J. F. White Constr. Co., Consolidated Builders, Inc., Westwood, Mass	858,501
10	J. F. Fitzgerald Constr. Co., Boston, Mass	1,159,524
EE	E. J. McCarthy, chief engineer	988,376

Bids: 4-2-57 Items	Unit	Quantity	Unit Prices 1C	2
Clear & grub	ac	30	$400 00	$700 00
Excavation, rdwy earth	cy	60,000	0 45	0 80
cl A rock	cy	13,000	2 05	2 20
peat	cy	19,500	0 35	0 30
loam & stackd	cy	9,500	0 40	0 80
bridge	cy	1,100	2 00	3 00
cl A trench	cy	1,400	2 00	2 00
cl B trench	cy	100	4 25	5 00
cl B rock	cy	600	6 00	8 00
Remove trees, under 24"ϕ	ea	10	45 00	40 00
24"ϕ & over	ea	2	65 00	100 00
Borrow, ordinary	cy	337,000	0 62	0 50
gravel	cy	50,500	0 85	0 80
sand	cy	50	5 00	5 60
Grading, rolling, finishing	cy	100,000	0 09	0 11
Cr stone for base crse	t	21,000	3 00	3 00
Bit for rdwy base crse	gal	163,000	0 16	0 13
Calc Chl, rdwy dust contr	lb	40,000	0 04	0 04
Bit, rdwy dust control	gal	1,500	0 17	0 15
surf treatment	gal	1,800	0 30	0 22
Cr stone, Macadam surf	t	2,800	3 10	3 00
Bit, Macadam surfacing	gal	48,000	0 16	0 13
Bit conc, cl I pave typII	t	10,100	7 45	7 00
cl I berms	t	240	17 00	15 00
Masonry, cem conc cl C	cy	75	55 00	80 00
Steel, reinf for structs	lb	1,200	0 13	0 15
Catch basins	ea	35	190 00	200 00
with concord frm & grt	ea	25	190 00	200 00
Manholes	ea	17	190 00	200 00
Catch basins, special	ea	14	200 00	200 00
Gutter inlets	ea	4	100 00	200 00
Reinf conc pipe, 12"	lf	4,000	3 55	3 00
15"	lf	130	3 90	4 00
18"	lf	300	5 05	5 00
24"	lf	300	7 10	6 00
24" 4000D	lf	270	8 50	8 00
30" 3000D	lf	250	10 00	9 00
ACCM, 12"	lf	220	4 20	4 00
CIP, Hvy wgt, 10"	lf	90	7 50	6 00
CCP, (VCP alt) 12"	lf	1,900	2 75	2 50
15"	lf	200	3 60	3 50
Sub-drn with 6" perf ACCMP (CIP alt)	lf	3,100	3 50	4 00
Culv, rem & relay, 12" pipe	lf	50	3 50	3 00
Paving, grtd cobbl stn wwys	sy	70	6 00	10 00
bit mix, waterways	sy	1,850	2 50	2 00
Posts, square	ea	65	10 50	10 00
Hwy guard T-C3S	lf	5,000	2 00	2 00
anchors	ea	24	50 00	50 00
Fence, stock	lf	7,500	0 55	0 55
barrier	lf	60	12 00	10 00
Curb, gran, straight T VA3	lf	300	3 75	3 00
Inlets	ea	35	35 00	30 00
Gran edg T SB str (alt gran face precast conc edg)	lf	1,270	1 90	1 50
Walk, bit conc surf	t	40	11 00	12 00
Bounds, furn & set, gran				
lettered	ea	20	29 00	30 00
plain	ea	25	25 00	30 00
remov & reset	ea	2	15 00	20 00
Mail boxes, rural, rem & set	ea	10	10 00	10 00
Bridge struct, R-1-4	ls	1	176,730	202,000
Bldg, dem 2 st wd hse	ls	1	550 00	1,000
1½ st wd barn with garg	ls	1	550 00	1,000
Bldg, portable office	ea	2	2,800	3,500
sanitary	ea	1	4,000	5,500
Loam, borrow	cy	500	3 00	1 00
rehandled & spread	cy	6,500	1 00	1 00
peat	cy	14,500	1 00	1 00
Seeding	sy	92,000	0 08	0 06
CI water main, 6"	lf	800	5 25	5 00
Hydrants, remov or reset	ea	1	110 00	300 00
Gate & box, rem & reset 6"	ea	1	135 00	40 00
Gate boxes adjusted	ea	2	10 00	20 00
CI plugs for wtr main, 6"	ea	1	50 00	20 00
Tappg slvs, vlvs & bxs 8"x8"	ea	1	350 00	400 00

Completion schedule: 500 calendar days

Announcing HI-CAP*...

New Du Pont Explosive

designed for economy in blasting operations

Hi-Cap . . . the newest addition to the Du Pont explosive family . . . will assure economy in many blasting operations.

The reason is simple. Hi-Cap answers the demand for a low-priced, cap-sensitive, water-resistant explosive with high strength for all-around shooting.

Hi-Cap is available in 12½ and 25 lb. bags for pouring into small diameter dry holes and in 23-G cartridges of 5" diameter and above.

When Hi-Cap is poured in small diameter holes, a 40% dynamite primer, 1¼x8, is recommended for detonation.

For maximum safety, charges of Hi-Cap should be detonated with Primacord in the usual manner using Du Pont MS delay connectors whenever practical. With this method of firing, you have no blasting caps on the job until the shot is ready to fire.

Notice how the 23-G cartridge is crimped to facilitate loading in the hole. The tape bail serves as a carrying handle, and also for lowering. Since no outside case is required for the 23-G cartridge, there is no packing material or debris left to clean up after the shot is loaded.

Call your Du Pont representative for more information on low-priced Hi-Cap or write: E. I. du Pont de Nemours & Company (Inc.), Explosives Department, Wilmington 98, Delaware.

**Registration applied for.*

DU PONT EXPLOSIVES

Blasting Supplies and Accessories

DU PONT

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

Materials and Labor Prices — Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Clay Products, Lime, Plaster, Paint, Roofing: Last June 27; Next July 25.
- Wage Rates, Building Board, Lath, Insulation: Last June 27; Next Aug. 1.
- Cement Aggregates, Ready-mixed Concrete, Asphalt: Last, July 4; Next Aug. 8.
- Iron & Steel Products, Pine: Last July 11; Next Aug. 15.

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F.O.B.

SOUTHERN PINE AND DOUGLAS FIR

All Southern Pine is No. 2 common or better and for No. 1 N.C. Box. (Prices in Bold Face)
All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1. Lengths up to 20 ft. (Prices in italics)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh	LONG LEAF Y. P. Merchantable grade up to 20 ft. 2x12 Rgh	12x12 Rgh	PLYWOOD Rail freight increment (See note for base price) ¼"	¾"
Atlanta †	$83.00	$88.00	$77.50	$76.00	$87.00	$95.00	$150.00	.....	.....	$110.00		$22.32	$27.24
Baltimore *	92.00	96.00	96.00	98.00	98.00	102.00	114.00			170.00	$185.00	25.92	31.60
	97.50g	*105.00g*	*125.00g*	*125.00g*	*125.00g*	*125.00g*	*135.00g*	*$144.00*	*$144.00*				
Birmingham †	87.00	89.00	82.00	89.00	92.00	97.00	112.00	.....	.....	115.00	160.00	21.78	26.58
	108.50	*108.50*	*108.00*	*108.00*	*108.00*	*115.00*	*111.50*	*108.50*	*108.50*	.....	.....	.....	.....
Boston ‡	99.00f	99.00f	107.00f	107.00f	107.00f	116.00a	.....	.....	.....	.....	.....	25.92	31.60
	97.00n	*97.00n*	*114.00*	*114.00*	*114.00*	*120.00*	*125.00*	*128.00*	*130.00*	.....	.....	.....	.....
Chicago **	94.00	97.00	91.00	105.00	113.00	114.00	109.00	.....	.....	137.00	137.00	22.45	27.37
	105.00	*105.00*	*118.00*	*116.00*	*116.00*	*117.00*	*125.00*	*125.00*	*125.00*	.....	.....	.....	.....
Cincinnati *	96.00	97.25	87.00	93.25	98.00	108.00	119.50	.....	.....	141.75	143.75	25.00	30.48
	100.25	*101.50*	*106.00*	*108.00*	*109.00*	*112.50*	*134.00*	*134.00*	*134.00*	.....	.....	.....	.....
Cleveland **	94.00	95.00	99.00	97.00	97.00	97.00	.....	.....	.....	.....	.....	25.37	30.93
			116.00	*108.00*	*108.00*	*108.00*	*136.50*	*136.00*	*136.00*	.....	.....	.....	.....
Dallas ‡‡	70.00	70.00	65.00	65.00	65.00	70.00	140.00	.....	.....	138.00	130.00	18.72	22.80
Denver *	*Not in stock*		*121.50*	*121.50*	*121.50*	*126.00*	*140.00*	*147.50*	*152.50*			13.92	16.98[1]
Detroit ‡	116.50	119.50	114.00	117.00	122.00	122.00	.....	.....	.....	130.00	.....	25.00	30.48
	125.00	*125.00*	*130.00*	*132.50*	*130.00*	*135.00*	*186.00*	*195.00*	*195.00*	.....	.....	.....	.....
Kansas City §	120.00	120.00	120.00	120.00	120.00	135.00	.....	.....	.....	.....	.....	16.56	20.16
	120.00	*120.00*	*120.00*	*120.00*	*120.00*	*130.00*	*150.00*	*225.00*	*225.00*	.....	.....	.....	.....
Los Angeles ‡	*95.00*	*95.00*	*95.00*	*95.00*	*95.00*	*95.00*	*119.00*	*130.00*	*130.00*	.....	.....	16.61ab	*20.25ab*
Minneapolis #	*135.00*	*135.00*	*140.00*	*140.00*	*140.00*	*140.00*	*186.00*	*186.00*	*186.00*	.....	.....	19.89	24.25
Montreal ab	94.00	103.00	94.00	95.00	113.00	130.00	.....	.....	.....	125.00	125.00	.....	.....
	180.00	*180.00*	*180.00*	*180.00*	*180.00*	*180.00*	*171.00*	*171.00*	*171.00*	.....	.....	.....	.....
New Orleans †	87.00	87.00	94.00	91.00	90.00	97.00	121.50	.....	.....	151.00	151.00	18.72	22.80
†	*110.00*	*110.00*	*106.50*	*120.00*	*120.00*	*120.00*	*132.50*	*132.50*	*132.50*	.....	.....	.....	.....
New York §	108.00	109.00	117.00	118.00	118.00	124.00	.....	.....	.....	240.00	250.00	25.92	31.60
	.....	.....	*117.00*	*120.00*	*121.00*	*122.00*	*165.00*	*165.00*	*165.00*	.....	.....	.....	.....
Philadelphia ‡	.....	Range from $117.00 to $137.00				117/137	117/137	.....	.....	214/224	214/224	25.92	31.60
		Range from $121.00 to $165.00				*121/165*	*136/158*	*165.00*	*165.00*	.....	.....	.....	.....
Pittsburgh 2	130.00	130.00	125.00	130.00	130.00	140.00	.....	.....	.....	155.00	.....	25.92	31.60
	.....	.....	*150.00*	*140.00*	*145.00*	*150.00*	*180.00*	*200.00*	*210.00*	.....	.....	.....	.....
St. Louis #	118.00	120.00	128.00d	128.00d	128.00e	133.00e	.....	.....	.....	.....	.....	18.72	22.80
	.....	.....	*135.00*	*135.00e*	*135.00e*	*139.00e*	*195.00e*	*195.00*	*195.00*	.....	.....	.....	.....
San Francisco A	*77.00*	*77.00*	*84.00*	*84.00*	*84.00*	*84.00*	*117.00*	*135.00*	*132.00*	.....	.....	12.22	14.91a
Seattle †	*67.00*	*73.00*	*73.00*	*73.00*	*73.00*	*74.00*	*85.00*	*90.00*	*90.00*	.....	.....	.....	.....
Toronto e	98.00	100.00	93.00	98.00	100.00	100.00	.....	.....	.....	102.00	.....	.....	.....
	114.00	*114.00*	*130.00*	*122.00*	*126.00*	*130.00*	*145.00*	*140.00*	*150.00*	.....	.....	.....	.....

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. # Retail, LCL, deliv. 2. Deliv. truck lots. § sad., truckload lots, 8/6 Mftbm

LUMBER: Bold Face Type, Southern Pine. Italics Douglas Fir. *a Spruce. *b Tax exempt. *c 5M lots. *d 8, 10, & 12 ft. lengths. *e 8 to 16 ft. lengths. *f Hemlock *g No. 1 common. *i 8ft. lengths. *k No. 3 common. *n #3. A incl rail rate from North west mills to San Francisco are $11.80 to $18.00 per M ft. bm. From Northern Calif. mills $9.00 by rail, $9.80 by truck. All rates for surfaced stock. For rough, add $3.00 to above figures.

PLYWOOD: Interior Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ¼", $152.00; on ¼", $170.00. Exterior ¼", $156.00, ¾", $174.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. *a Lower rate by water shipment. *b 80,000 lb. minimum.

GLASS, EXPLOSIVES, CHEMICALS

WINDOW GLASS

Discounts from jobbers list, Feb. 1, 1950a

	Single or Double Strength A quality	B quality
Atlanta	78%c	78%d
Baltimore	74%d	76%d
Birmingham	82%	83%
Boston	73-10%	73-10%
Chicago	72%	72%
Cincinnati	74%	74%
Cleveland	74-2-10%	74-2-10%
Dallas	75%	75%
Denver	73%	73%
Detroit	74-10-10%	74-10-01%
Kansas City	76-10%	76-10%
Los Angeles	70%	76%
Minneapolis	71-10%	71-10%
Montreal	40-10-5%be	40-10-5%b
New Orleans	75%	76%
New York	79-10%	79%
Philadelphia	74-10%	76-10%
Pittsburgh	72%	72%
St. Louis	72-10-10%	72-10-10%
San Francisco	60%	72%
Seattle	67%	70%

Glass: *a Jobbers' list price per box, 14 x 20, as, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b Discount from list, Apr. 1951; sales tax included, but 6% tax exemption not allowable for. *c 77% for single strength *d Discount 6/15/52. *e 77% for double strength

EXPLOSIVES

Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*

Atlanta	$0.2615
Baltimore	.2615
Birmingham	.2065
Boston	.2615
Chicago	.2615
Cincinnati	.2615
Cleveland	.3015
Dallas	.2690
Denver	.2665
Detroit	.2615
Kansas City	.2665
Los Angeles	.2640
Minneapolis	.2665
Montreal	22.05h
New Orleans	.2665
New York	.45i
Philadelphia	.2615
Pittsburgh	.2615
St. Louis	.2665
San Francisco	.2615
Seattle	.2640

Price of 60% Ammonia Gelatin is $0.15 per lb. higher than 40% in U. S., $1.75 per 100 lbs. higher in Canada.

Explosives: * Cartridges of 1¼", 1½", 1¾", 2", 2½", 2½", 3" diameters. Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. *h F.o.b Beloeil (near Montreal), per 100 lb. forcite, 40%. Forcite 60%, $23.80

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E of the Miss., except Fla and Me.	$0.2065	$0.2465	$0.2615
W of Miss. to Rocky Mtn. States, Fla. and Maine	.2115	.2515	.2615
Rocky Mtn. States	.2115	.2515	.2665
Pacific N. W. States	.2090	.2490	.2640
Pacific S. W. States	.2065	.2465	.2615

PILES, TIES F.O.B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail Pine*	By Rail Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.51	....
12-in.—2-ft. from butt	6-in.	50 to 59-ft.	.54	....
12-in.—2-ft. from butt	6-in.	60 to 69-ft.	.58	....
12-in.—2-ft. from butt	6-in.	90 to 100-ft.	....	....
13-in.—3-ft. from butt	5-in.	91 to 100-ft.	....	....
14-in.—2-ft. from butt	6-in.	50 to 69-ft.	.50/66	....
14-in.—2-ft. from butt	6-in.	70 to 79-ft.	.75/.81	.93
14-in.—2-ft. from butt	5-in.	80 to 85-ft.	.83/.93	.94
14-in.—2-ft. from butt	5-in.	85 to 89-ft.	....	1.00
14-in.—2-ft. from butt	5-in.	90 to 100-ft.	....	1.03

* Pine piling over 80-ft. available only in limited quantities

RAILWAY TIES

Prices f.o.b. per tie for carload lots:

		8' x 8" x 8' Untr.	8' x 8" x 8' Tr.	7' x 8" x 8'6" Untr.	7' x 8" x 8'6" Tr.
Birmingham*	Hardwood, Grade 3	$1.70	$2.55	Gr. 5 $2.25	$3.33
	Grade 2	1.50	2.35	" 4 2.10	3.18
	Grade 1	1.15	2.00	" 3a 1.70	2.78
Chicago	Red Oak	.....	4.00a	.....	4.80a
New York	S. L. Sap Pine	2.00d	4.00d	3.00g	6.00g
	Mixed Oak	2.50d	4.50d	3.50g	6.50g
Philadelphia	Red Oak	2.95/3.15	4.50/4.70	3.80/3.80	5.50/5.75
St. Louis	White Oak	2.65	.....	2.95	.....
	Red Oak	2.55	3.25a	2.80	3.60a
San Francisco	Douglas Fir	2.03ef	2.95ef	2.84bef	4.31cef

Tr.—Treated; Untr.—Untreated. a Creosoted. b 7" x 9" x 8'. c Empty cell d 6 x 8 x 8'6" e Green. f f.o.b. cars. g 7 x 9 x 8'6" * Add 75¢/tie freight charge to Birmingham.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb.	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	.103
Calcium chloride, 77-80%, flaked, 100-lb. paper bag, f.o.b. works, ton	29.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb.	2.30
Soda ash, 58%, in paper bags, per 100 lb. dense	1.70
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.85
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	14.90

BRIXMENT

Better Mortar for Blocks

BETTER PLASTICITY

To build the best possible concrete-block walls, the bricklayer must use plastic mortar. The mortar must be plastic enough to stick to the long head joint. It must not drop off the edges of the block when the block is swung up, and lowered into place. It must remain plastic long enough to enable the bricklayer to tap the block down to the line, easily and accurately.

Brixment mortar provides this necessary plasticity. Moreover, it stays soft and plastic long enough to let the bricklayer level, plumb and straighten the unit and adjust it to its final position in the wall before the mortar stiffens.

Louisville Cement Company . . . Louisville 2, Kentucky

Steeltex eliminates costly pre-construction engineering required by other centering materials. It gives clean, dependable reinforcing form in any lengths needed regardless of variation in joist spacing. Steeltex is light, easy to handle.

Steeltex speeds college construction

Contractors tell of money-saving advantages gained from Pittsburgh Steel's floor lath on Purdue and University of Kentucky jobs

The critical need for new school buildings to handle our expanding population is also acute on college campuses.

At Purdue University and University of Kentucky, where married veterans and their families are crowding housing facilities, big construction programs are underway. At both universities, Steeltex wire mesh reinforcing floor lath was specified by architects because it helps achieve the most value for each construction dollar.

Purdue is engaged in a $9½ million project to house married students in a unique 58-building development located on a 30-acre site at the edge of the West Lafayette, Indiana, campus.

In Lexington the University of Kentucky is building the $2 million Shawneetown married students and faculty housing project on a 10-acre site adjacent to the campus to provide 186 apartments for married students and faculty members.

In Indiana, since economy of construction was an important factor to university authorities, Architect John R. Diehl of Fairless Hills, Pennsylvania, specified Pittsburgh Steel Products' Steeltex, the reinforcing that carries its waterproofed form right on its back.

The 370,000 square feet of Steeltex, used to cover joists on the first and second floors of the units, will return substantial savings in time and money while assuring durable concrete floors.

John W. Galbreath & Co., Columbus, Ohio, teamed with Turner Construction Co. of New York City to form Galbreath-Turner, general contractors for the construction.

Earl Wooten, superintendent for Carl Vestal, Inc., Indianapolis, sub-contractor who installed the Steeltex, gave this estimate of the time saved by using Steeltex to cover 370,000 square feet of floors.

"If we had used another material, each of these 58 buildings would take six days and require 20 men's services. With Steeltex, however, we needed only one and one-half days and the services of five men for each building."

Similar commendation came from the Kentucky project where Ben Landin, general superintendent for the Hargett Construction Co., of Lexington, said:

"I like Steeltex because of the installation speed. If we had to use a reinforcing material that required wooden forms, it would call for a heavier slab—about four inches thick. But with Steeltex, we need only a 2¾-inch slab which gives us lighter-weight construction.

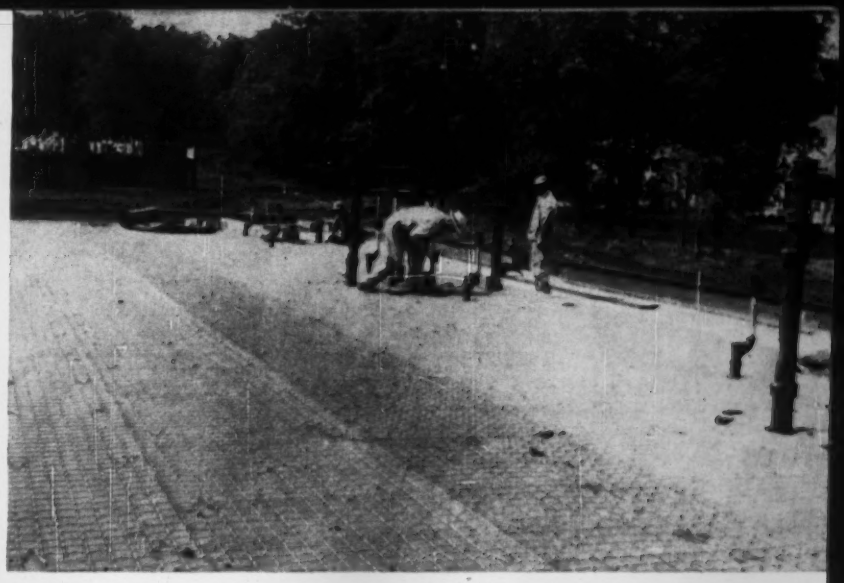
"Another advantage is that Steeltex provides lateral stability for the joists. A stronger structure is the result.

"I believe that Steeltex is far superior to any other type of material for fitting around irregular-shaped objects quickly and snugly. We don't waste as much concrete and we complete the job faster."

And Lewis H. Hargett, president of the contracting firm, cited these Steeltex advantages: "It's economical, it's convenient to install and the men on the job don't need any special training to install it."

He added, "In recent years, we've used several hundred thousand square feet of Steeltex and found it completely satisfactory. After checking the cost of Steeltex over other materials, we find there is a definite saving per square foot in using Steeltex."

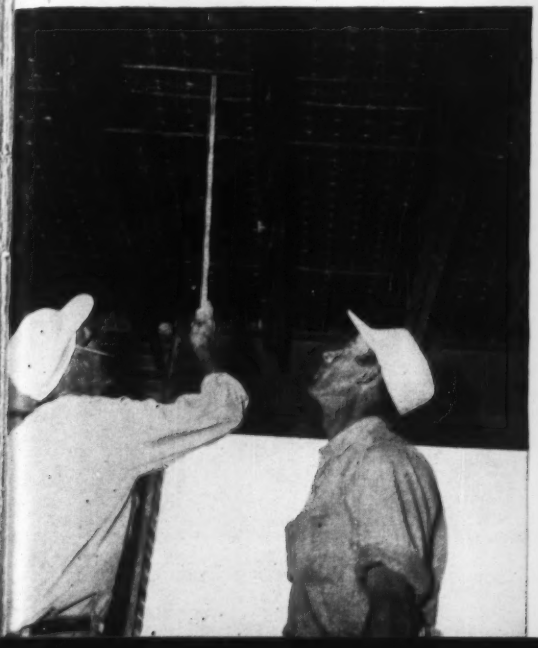
These same advantages can work for you when you use Steeltex, sold by the Pittsburgh Steel Products Division of Pittsburgh Steel Co. Start pocketing these savings now. You can do that by picking up your telephone now and getting in touch with one of the trained engineers waiting to help you in each of the district offices listed below. Do it today.



Pittsburgh Steeltex is installed faster than alternate materials. Here it's being installed at the University of Kentucky's housing project.

Steeltex fits around irregular piping, vents and projections. Easy to cut, it speeds construction and saves money.

Superintendent Ben Landin (left) of Hargett Construction Co. points to clean, neat appearance of Steeltex under concrete slab to Superintendent Jim League, Whalen Erecting Co. which installed Steeltex.



Steeltex®

Pittsburgh Steel Products

***a division of* Pittsburgh Steel Company**

Grant Building • Pittsburgh 30, Pa.

District Sales Offices

Atlanta	Cleveland	Dayton	Los Angeles	Pittsburgh
Chicago	Dallas	Detroit	New York	Tulsa
		Houston	Philadelphia	Warren, Ohio

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, S. N. NOLAN, Reports
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

▲ **Mass., Arlington**—SCHOOL—BA 7/26—Town, School Dpt., 23 Maple St., Senior High School alterations, Mass. Ave. $1,716,500. Plans deposit $50, refundable. Korslund, LeNormand & Quann, Inc., 506 Washington St., Norwood, Mass., archt. CD 4/11, under LB.

BUILDINGS—SLC

Conn., Wallingford—LABORATORY, etc.—American Cyanamid Co., 30 Rockefeller Plaza, New York, N. Y., soon lets contract 1 story and 160x340 laboratory, 7,600 sq. ft. office. $500,000. Jaros, Baum & Bowles, 415 Lexington Ave., New York, N. Y., consult. engrs. Pedersen & Tilney, 111 Whitney Ave., New Haven; archts. CD 3/26/56, under Commercial Buildings.

▲ **R. I., Middletown**—SHOPPING CENTER—Kempenaar Real Estate Co., Evergreen Ave., soon lets contract 90,800 sq. ft. shopping center, incl. Sears, Roebuck Co., W. T. Grant Co., F. W. Woolworth & Grand Central Market. $1,000,000. Aquidneck Shopping Center, Inc., c/o William O'Rourke, archt., 90 Union St., Warren, R. I., lessee. CD 1/4.

HEAVY CONSTRUCTION—LB & CA

MAINE—State Hy. Comn., State House, Augusta, Me.—**Cianchette Bros., Inc.,** Pittsfield, Me., CA **$665,188** (5 bidders), 0.193 mi. b. conc. road and bridge, FA Proj. IN-083-1 (2), Bangor;
Me.—**The Lane Constr. Corp.,** Meriden, Conn., CA **$134,456** (2 bidders), 4.612 mi. b. conc. surf., Town of Rockport S-0205 (6), Town of Hope, S-0205 (7), FA Sec. Proj. No. S-0205 (5), City of Rockland;
Me.—**H. E. Sargent, Inc.,** Stillwater, Me., CA **$180,073** (10 bidders), 2.399 mi. b. conc. FA Sec. Proj. No. S-0135 (3), Towns of Mechanic Falls and Poland. Grand total $979,717. Bids June 26. CD 6/14.

† **Herbert E. Callahan, Inc.,** 41 North Main St., Auburn, Me., CA **$596,850,** est. $651,000, A.U.W. Bldg., Naval Air Station, NBy 92649, Spec. No. 42972, BRUNSWICK, ME., U.S.A. First Naval Dist., 495 Summer St., Boston, Mass. Thomas Worcester, Inc., 85 State St., Boston, Mass., engr. Bids May 28. CD 6/4.

† **Consolidated Constructors, Inc.,** 807 Congress St., Portland, Me., CA **$982,237,** est. $1,114,110, misc. bldgs. and utilities, Air Force Station, ENG-19-016-57-225, BUCKS HARBOR, ME. U. S. Eng., 150 Causeway St., Boston, Mass. Alonzo B. Reed, Inc., 88 Broad St., Boston, Mass., engr. and archt. Bids June 13. CD 6/18, under LB.

▲† **Peter Kerro & Curley Constr. Co., Inc.,** P. O. Box 4, Colling and Central Sts., Rochelle Park, N. J., CA **$3,798,669,** flood control proj., 3 mi. south of Worcester, Auburn and Millbury, ENG-19-016-57-80, MASSACHUSETTS. U. S. Eng., 150 Causeway St., Boston, Mass. Bids May 21. CD 5/23, under LB.

▲† **Beacon Constr. Co.,** 102 Hano St., Allston, Mass., CA **$3,515,447,** est. $3,165,840. family housing, at Otis Air Force Base, ENG-19-016-57-209, FALMOUTH, MASS. U. S. Eng., 150 Causeway St., Boston, Mass. CD 6/19, under LB.

D'Addario Constr. Co., 513 Boston Ave., Bridgeport, Conn. and F. E. Daddario Corp., 73 Tremont St., Boston, Mass., CA **$625,000,** 15 mi. 4- to 18-in. influent and effluent sewers, NEW MILFORD, CONN. Town, Town Hall, New Milford, Conn. Awarded June 27. CD 5/16.

BUILDINGS—LB & CA

▲ **Vappi & Co., Inc.,** 240 Sidney St., Cambridge, Mass., CA **$2,000,000,** 170,000 sq. ft. FACTORY addn., incl. OFFICE WING, FOXBORO, MASS., Foxboro Co., Neponset Ave., Foxboro, Mass. Bids June 14. CD 7/2, under LB.

S. Volpe & Co., Inc., 185 Devonshire St., Boston, Mass. LB **$444,700** Item 1, LB **$438,100** Item 2, **$418,700** Item 3, Naval U. S. Marine TRAINING CENTER, Sea St., NBy 12794, Spec. No. 12794/57, QUINCY, MASS. U. S. A. First Naval Dist., 495 Summer St., Boston, Mass. Bids June 27. CD 6/7.

T. A. Pearson Assoc., 686 Union St., East Springfield, Mass., LB **$850,000,** est. $850,000, TELEPHONE BLDG. addns., alterations, Elm and Chestnut Sts., WORCESTER, MASS. New England Telephone & Telegraph Co., 185 Franklin St., Boston, Mass. Bids June 25. CD 6/2.

Maloney & Robien Constr. Co., 66 Wickenden St., Providence, R. I., LB **$725,000,** est. $750,000, Bids Nos. 982, 983 and 984 and 5, Proj. EXE-4, EDUCATIONAL and RECREATION BLDG. at State School, EXETER, R. I. State R. I. & Prov. Plants, Div. Purchase, State House, Providence, R. I. Bids June 28. CD 6/20.

▲ **Sachs Bros.,** Cherry Hill, Branford, Conn. Owner Builds. **$2,225,000,** 420 unit APARTMENT, Cherry Hill Rd., Branford Hills; **$1,912,000,** 80 HOUSES, 'Cherry Hill Estates", Cherry Hill Rd., BRANFORD, CONN. Hyman I. Feldman, 415 Lexington Ave., New York, N. Y., archt. CD 10/23.

▲ **Baltimore Contractors, Inc.,** 711 South Central Ave., Baltimore, Md. LB **$3,557,000.** (3 bidders) HIGH SCHOOL addn., BRISTOL, CONN. Town, School Bldg. Comn., Town Hall, Bristol, Conn. Bids June 28. CD 6/24.

Massacoe Builders, Inc., Meadow Plains Rd., Simsbury, Conn., LB **$437,774** (3 bidders) 1 story POLICE and COURT BLDG., Tolland St., EAST HARTFORD, CONN. Town, Town Hall, East Hartford, Conn. CD 6/6.

Giordano Constr. Co., 287 Main St., Branford, Conn., LB **$983,000,** HIGH SCHOOL, Long Hill, GUILFORD, CONN. Town, Town Hall, Guilford, Conn. CD 6/14.

▲ **Construction Corp.,** 299 Main St., East Hartford, Conn. LB **$1,318,700,** est. $1,210,000. (5 bidders) Proj. MR-64 Moderate Rental HOUSING, NEW BRITAIN, CONN. New Britain Housing Auth., 34 Marimac Rd., New Britain, Conn. Bids June 28. CD 6/7.

Dwight Bldg. Co., Sanford St., Hamden, Conn., CA **$700,000,** 4 story, 55x100 ft. RESEARCH LABORATORY for anatomy and biochemistry, addn. to MEDICAL SCHOOL BLDG., NEW HAVEN, CONN. Yale University, 105 Wall St., New Haven, Conn. Douglas Orr, 111 Whitney Ave., New Haven, Conn., archt. Awarded June 27. CD 4/18.

▲ **Joseph F. Kelly Co., Inc.,** 184 Front Ave., West Haven, Conn. CA **$1,500,000.** MOTOR TRUCK TERMINAL BLDG., 70,000 sq. ft. terminal and 60,000 sq. ft. maintenance bldg., Bull Hill Lane, ORANGE, CONN. Adley Express Co., Inc., 216 Crown St., New Haven, Conn. Bids May 7. CD 4/24.

▲ **A. F. Peaslee, Inc.,** 37 Lewis St., Hartford, Conn. LB **$1,452,777.** (5 bidders), Vernon HIGH SCHOOL, VERNON, CONN. Town, School Bldg. Comn., Vernon, Conn. Bids May 16. CD 5/27, under LB.

Milhaven Heights, Meloy Rd., West Haven, Conn. Owner Builds. **$539,600,** 40 HOUSES, Milhaven Heights, Meloy Rd., WEST HAVEN, CONN.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.
CD dates shown are of Construction Daily issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† **Federal Government**
▲ **Project of $1,000,000 or over.**
ENR Engineering News-Record
CD Construction Daily
For additional reports see Construction Daily.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

PENNSYLVANIA — BA 7/30 — Pennsylvania Turnpike Comn., Box 531, Harrisburg,
Bedford and Fulton Counties — surf. treat. 24 mi. shoulders, median strips and ramps. Contr. 127-B.
Somerset and Bedford Counties—surf. treat. 22 mi. shoulders, 5 mi. median strips and ramps. Contr. 127-A.
Westmoreland Co.—surf. treat. 32 mi. shoulders, 15 mi. median strips and ramps. Contr. 127. Plans deposit $10 each. CD 10/28/53.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—John W. Johnson, supt. Dpt. P. Wks., The Gov. Alfred E Smith State Office Bldg., Albany, **Peckham Road Corp.,** 50 Haarlem Ave., **White Plains,** N. Y., CA **$1,837,439** est. $2,482,000 (8 bidders), b. conc. paving previously graded 8.02 mi. sect. Taconic State Parkway near Martindale Depot, Columbia Co. Bids May 16. CD 5/17, under LB.

▲ **NEW YORK**—State Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany,
N. Y.—**A. V. Orlando & Edenwald Contg Co.,** 151-45 6th Rd., Whitestone, N. Y., CA **$3,943,230,** est. $5,174,000 (3 bidders), 4.82 mi. 4-lane divided sect. Penn-Canada Expressway, access roads, 2.84 mi. from Arsenal St. (Rte. 3) near west city limits of Watertown generally northeastward to New Military Rd. incl. interchanges at Coffeen St. (Rte. 12F) and Bradley St. (Rte. 12), 5 grade separation structures and 2 bridges, Jefferson Co.; CA **$1,796,736,** est. $1,969,000 (8 bidders), reconstr. 7.3 mi. sect. Rte. 3, starting at High St. in Natural Bridge and extending generally northeastward toward Harrisville mostly on new imprv. alignment to point just east of county road leading to Bonaparte, incl. constr. near Natural Bridge on new bridge to carry road over traces Carthage Branch N. Y. Central R. R. and new bridge over Indian River, Lewis and Jefferson Counties. Bids June 6. CD 6/7, under LB.

Frazier Davis Constr. Co., 1319 Macklind Ave., St. Louis, Mo., LB **$413,660,** Contr. 446, unwatering and cleaned the Roundout-W. St. Branch Tunnel of Delaware Aqueduct, NEW YORK. Bd. Water Supply, 120 Wall St., New York, N. Y. Bids June 2, CD 6/6.

Teller Paving & Contr. Corp., 389 East 167th St., New York 56, N. Y., CA **$700,846,** Park Development, incl. constr. Umbrella Concession Bldg. Manhattan Beach Park, south of Oriental Blvd. between Ocean Ave. and Mackenzie St., B-251-256, BROOKLYN, N. Y. Comr. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., New York 21, N. Y. Bids June 3, awarded July 1, CD 5/28.

† **Hueber Bros.,** 243 Baker Ave., Syracuse, N. Y., CA **$771,103.** constr. air national guard facilities at Hancock Field, SYRACUSE, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids June 18, CD 6/6.

▲ **Square Constr. Co.,** 115 South Haven St., Baltimore 24, Md., CA **$1,783,550.** Bid 2832, intercepting sewer in city property, west interchange of Penrose Ave. Bridge R/W, private property and railroad right of way from point 189 ft. N. W. of center line of Southwest Sewage Pumping Station, (STA. 1 plus 89.00) northeastward to 67th St. (STA 85 plus 06.41) (Lower Schuylkill West Side Intercepting Sys.) PHILA. PA. Dpt. Procurement, City Hall Annex, Phila. Pa. Bids June 25, CD 6/11.

Thompson Constr. Corp., 425 Delaware Ave., Camden 2, N. J., CA **$774,187.** Bid No. 2818, Lardners Point Pumping Station alterations, PHILA., PA. Dpt. Procurement, City Hall, Annex, Phila., Pa. Bids June 4, CD 6/14, under LB.

BUILDINGS—LB & CA

† **Siegfried Constr. Co., Inc.,** 6 North Pearl St., Buffalo 2, N. Y., CA **$622,414;** constr. U. S. Army RESERVE TRAINING CENTER, AMHERST, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids June 24. CD 6/4.

▲ **Hewlett Park Homes,** c/o Alwin Cassens, Jr., archt., 145 S. Franklin Ave., Valley Stream, N. Y. Owner Builds. **$5,400,000,** 175 HOUSES, 68 acre tract in Peninsula Blvd. near Mill Rd., HEWLETT, N. Y.

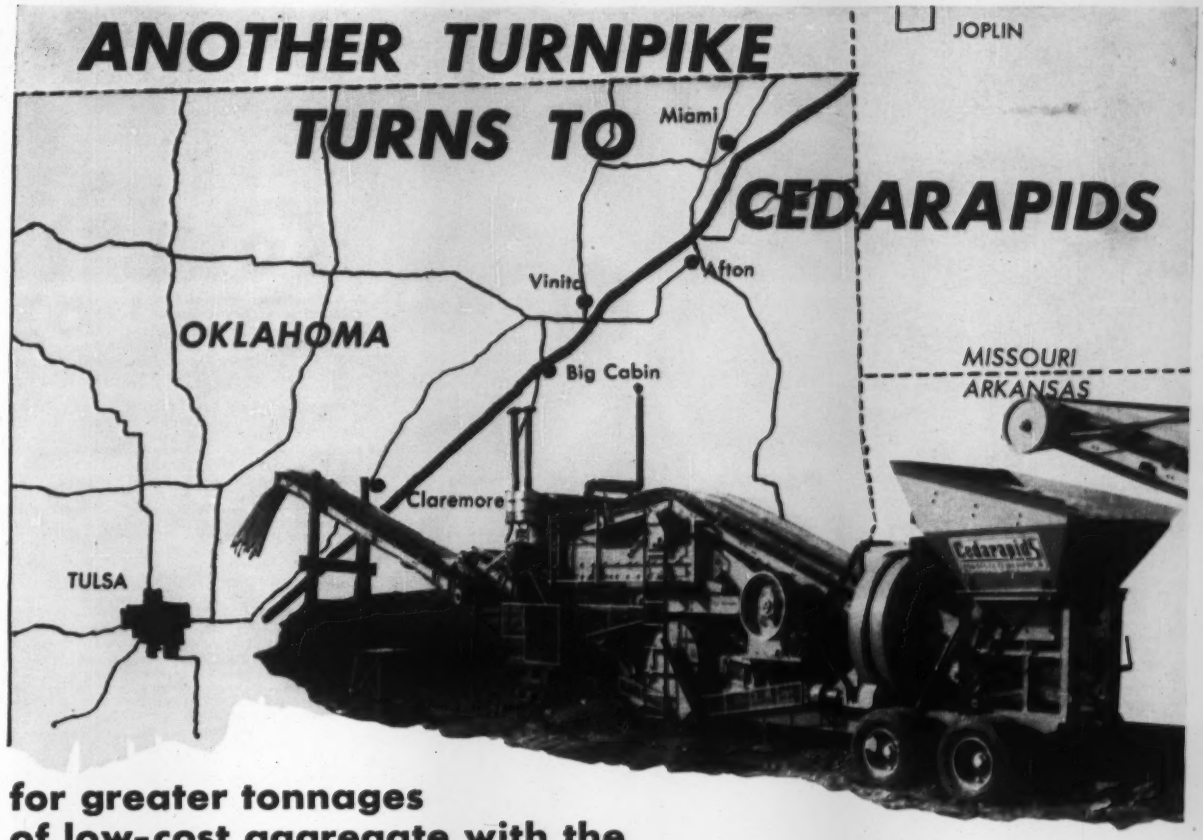
Brown-Turner, Inc., 205 E. 42 St., New York, N. Y., CA **$972,360,** general constr. refrigeration and food service equip. work for STOREHOUSE BAKERY and COLD STORAGE BLDG., Bldg. 70, Newark State School, NEWARK, N. Y. Bureau Contg. & Accounts, the Governor Alfred E. Smith State Office Bldg., Albany, N. Y. Bids May 23. CD 5/31 under LB.

▲ **Director, Bureau Contr.,** 42-15 Crescent St., Long Island City 1, N. Y., rejected bids Feb. 14, JUNIOR HIGH SCHOOL 22, Sheriff St. between Stanton and Houston Sts., Manhattan Boro, NEW YORK, N. Y. LB est. **$3,651,000.** CD 2/20, under LB.

▲ **Uris Bros.,** 575 Madison Ave., Zone 22, New York, N. Y., Owner Builds. **$10,000,000,** 34 story OFFICE,

(Continued on page 106)

ANOTHER TURNPIKE TURNS TO CEDARAPIDS



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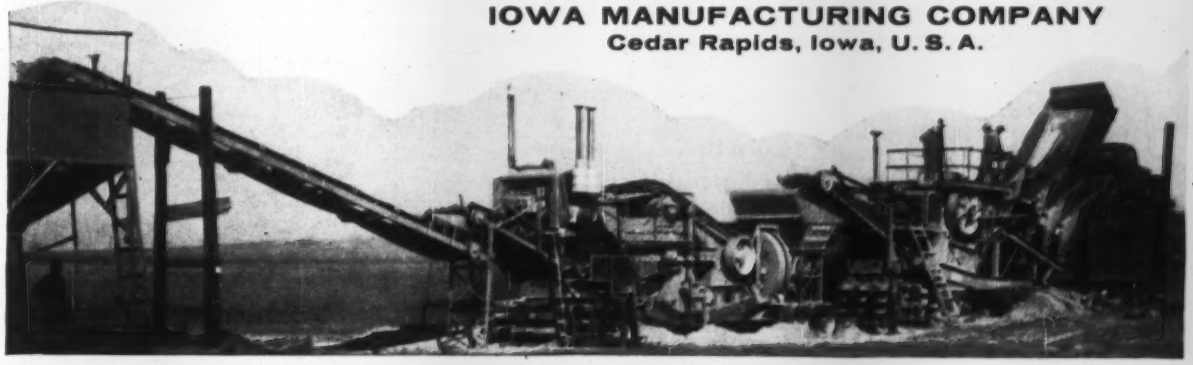

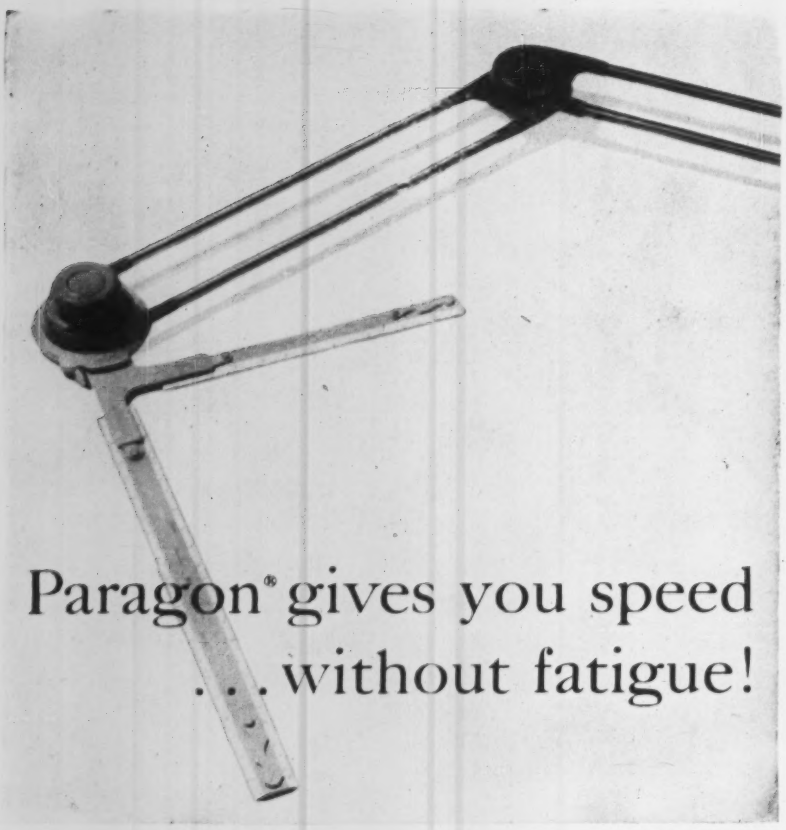

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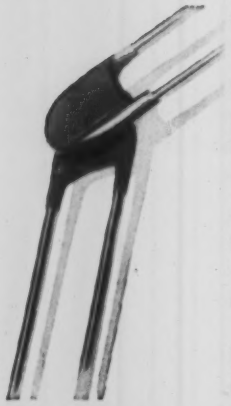

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(Continued from page 104)

740-754 Third Ave. between 46 and 47 Sts., NEW YORK, N. Y. CD 5/17/56.

▲ **Samuel Rudin,** 415 Madison Ave., New York, Zone 17, N. Y., Owner Builds. **$25,000,000,** 38 story OFFICE BLDG., 80 Pine St., NEW YORK, N. Y. Emery Roth & Sons, 575 Madison Ave., New York 22, N. Y., archts.

▲ **Hilltop Estates,** c/o Henry A. Klar Realty, 220-02 Horace Harding Blvd., Bayside Hills, N. Y., Owner builds. **$2,000,000.** 55 HOUSES on tract in Cold Spring Rd., south of Northern Blvd., SYOSSET, N. Y.

▲ **Walter Kidde,** 140 Cedar St., New York, N. Y., LB **$2,235,000,** est. $4,500,000. (29 bidders) general contract, connecting with existing hospital two ½ story WINGS and two 7 story WINGS. NEW BRUNSWICK, N. J. St. Peter's Hospital Bd. Trustees, Easton Ave., New Brunswick, N. J. Bids June 19, CD 6/3; **Frank McBride,** 75 Spring St., Paterson, N. J., LB **$691,762,** heating and ventilating. (New Brunswick, N. J.);
J. H. Delaplaine, Highland Park, N. J., LB **$240,810,** electrical work (New Brunswick, N. J.).

Somerset Country Club Estates, c/o Jules M. Baron, 135 Broadway, New York, N. Y. Own Forces. **$520,000.** 20 HOUSES in Country Club Estates, Rte. 206, SOMERVILLE, N. J. Tectonic Assocs., U. S. Hy. 206, Somerville, N. J., archts.

▲ **Daley & Co., Inc.,** 1245 Nottingham Way, Trenton, N. J., LB **$1,100,000,** general contract State Mental HOSPITAL, Vroom Bldg. addn., TRENTON, N. J. N. J. Dpt. Purchases & Property, State House, Trenton, N. J. CD 6/21.

▲† **Malan Constr. Corp. & Deane Constr. Co., Inc.,** 2 Park Ave., New York, N. Y., LB **$5,140,000.** general contract Naval Air Turbine Test Station, ram blower bldg. extension and altitude test chamber, NBy 11554, Mercer Co., TRENTON, N. J. Dpt. Navy, Phila. Naval Base, Phila., Pa. Bids 6/18. CD 5/6.

▲ **Crump, Inc.,** 4031 Bigelow Blvd., Phila., Pa., CA Est. $1,900,205, 5 story, steel, brick, block hospital addns., alterations, HOMESTEAD, PA. Homestead Hospital, 1800 West St., Homestead, Pa. CD 6/7/56.

▲ **Westmoreland Constr. Co.,** Huff Ave., Greensburg, Pa., CA Est. **$1,268,210,** 3 story, bsmnt., 44x90 ft., steel, brick, block hospital wing addn., etc., JEANNETTE, PA. Jeannette Memorial Hospital, Jeannette, Pa. Sorbery & Hoone, 1st National Bank, Greensburg, Pa., archts. CD 12/12/47.

▲ **Hicks, Tate, Inc.,** 2517 St. Paul St., Baltimore 12, Md., LB **$1,063,772** (11 bidders), 1 & 2 story, masonry, concrete, steel, block, Pleasant Plains Elementary School, TOWSON, MD. Baltimore Co. Bd. Educ., Aigburth Rd., Towson 4, Md. Bids June 24. CD 6/14.

▲† **John McShain, Inc.,** 17 and Spring Gardens St., Phila., Pa., CA **$35,525,200.** Base Bid No. 1, State DEPARTMENT BLDG. extension and remodeling, WASH., D. C. General Services Admin. P. Bldgs. Serv., General Service Bldg., 19 and F St. N. W., Wash. 25, D. C. Bids June 27, CD 7/2, under LB; **Haughton Elevator Co.,** 2117 "K" St. N. W., Wash., D. C., CA **$2,145,000.** Base Bid, elevator plant, State Dpt. Bldg., 21-23 Sts., C to E Sts. N. W. (Wash., D. C.)

Atlantic Engineering & Constr. Co., c/o owner. CA **$600,000,** RESIDENTIAL DEVELOPMENT, Ashbourne Hills, CLAYMONT, DEL. Ashbourne Hills, Inc., c/o Harry Rubenstein, Equitable Security Bldg., 9 and Market Sts., Wilmington, Del.

Ernest DiSabatino & Sons, 2601 W. 4th St., Wilmington, Del. CA **$636,900,** Darley Road Elementary SCHOOL, CLAYMONT, DEL. Claymont Special School Dist., Claymont, Del. Bids June 25, CD 6/12.

SOUTH

HEAVY CONSTRUCTION—BA

▲† **Fla., Homestead Air Force Base**—BA 8/6—Base Contracting Office, 1225 units Armed Service Housing, vicinity of Homestead Air Force Base, IFB-08-621-57-59. Plans deposit $100, refund. Norman M. Giller & Assocs., 975 Arthur Godfrey Rd., Miami Beach, engrs.-archts. CD 5/21, under LB.

HEAVY CONSTRUCTION—LB & CA

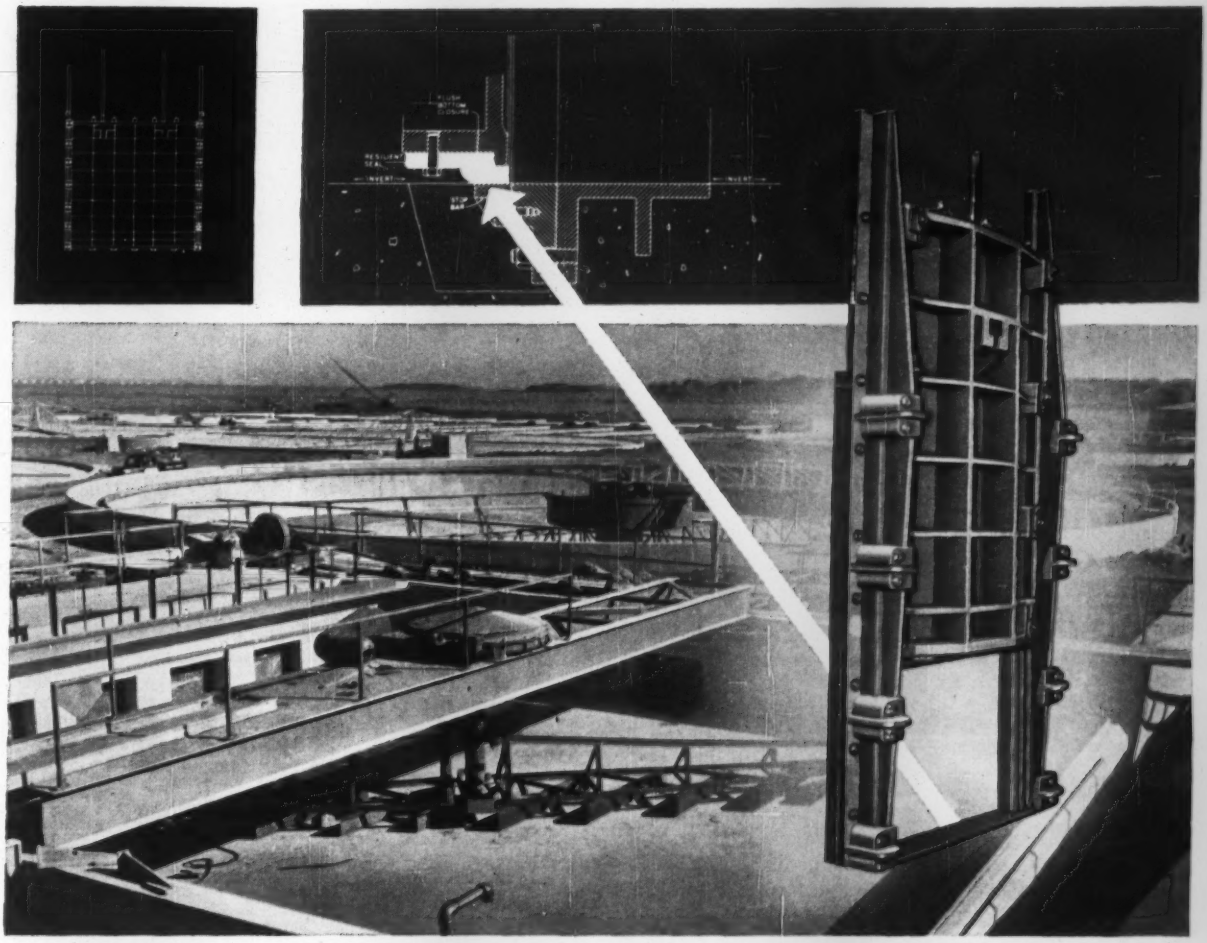
▲ **FLORIDA**—State Road Dpt., Wilbur E. Jones, chn., Tallahassee,
C. T. Stockton, Inc., 660 N.W. 54th St., Miami, Fla. CA **$1,139,012.** (7 bidders), 8½ in. rock base with b. conc. surf. course and hot binder course; drainage structures, etc., 7.007 mi. between Crevard Co. line, southeast thru Sebastian, FA Proj. No. F-003-4 (22), Job No. 8801-207 SR (U. S. 1), Indian River Co. Bids May 16 awarded July 1. CD 5/23, under LB.

▲† **Deep South Constr. Co., Inc.,** 4708 N. Court St., Montgomery, Ala. CA **$1,343,503.** heliport, taxiways, parking apron, access road, parking area at Auxiliary Field No. 2, ENG-01-076-57-104, FORT RUCKER, ALA. Army Aviation Center, Fort Rucker, Ala. Bids June 25, awarded June 29. CD 6/6.

▲† **Henry C. Beck Co.,** 1 National Bank Bldg., Dallas, Tex. CA **$1,053,521,** est. $1,540,901. CONAC Reserve Facilities, Barksdale Air Force Base, ENG-03-050-57-48, SHREVEPORT, LA. U. S. Eng., 300 Broadway, Little Rock, Ark. CD 7/2, under LB.

† **James E. Smith & Sons,** 2438 Crittenden Dr., Louisville, Ky. LB **$847,847,** est. $1,500,000. air-conditioning Federal Bldg., 6th and 9th St., Broadway,

(Continued on page 109)



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(Continued from page 106)

LOUISVILLE, KY. General Services Admin., Chicago, Ill. Bids June 27. CD 6/17.

† **Harrison Constr. Co.**, Alcoa, Tenn., LB **$945,218**, est. $1,054,783; constr. runway and taxiway extensions and other facilities at McGhee-Tyson Airport, KNOXVILLE, TENN. U. S. Eng., 206 Federal Office Bldg., Nashville, Tenn. Bids June 26. CD 6/5.

BUILDINGS—LB & CA

▲ **T. A. Loving & Co.**, Bank of Wayne Bldg., Goldsboro, N. C., LB **$1,296,385**, HOUSING Projs. 19-3 and 19-4, ROCKY MOUNT, N. C. Rocky Mount Housing Authority, Rocky Mount, N. C. Jno J. Rowland, James M. Simpson, Thomas, Harles & Edwards, Kinston, N. C., archts. Bids June 18. CD 9/12.

▲ **M. B. Kahn Constr. Co.**, Box 595, Columbia, S. C., LB **$3,415,825**; low rent HOUSING, GA 2-7, SAVANNAH, GA. Savannah Housing Authority, 200 E. Broad St., Savannah, Ga. Bids June 25. CD 6/19.

▲ **A. B. Newton & Co.**, Box 191, Vidalia, Ga., LB **$1,679,000** low-rent HOUSING, Proj. Fla. 34-1 & 34-2, PLANT CITY, FLA. Plant City Housing Auth., City Hall, Plant City, Fla.. Bids June 25. CD 6/21.

▲† **Daniel Constr. Co., Inc.**, 812-7th Ave. S., Birmingham, Ala., CA **$1,206,910**, 3 story, 60,000 sq. ft. ENGINEERING MISSION SUPPORT BLDG., Redstone Arsenal, HUNTSVILLE, ALA. Army Missile Center, Redstone Arsenal, Huntsville, Ala. Bids June 26, awarded June 29. CD 7/1, under LB.

▲† **Batson-Cook Co.**, West Point, Ga., CA **$1,617,701**, 2 story 122,000 sq. ft. ACCEPTANCE TEST AND QUALIFICATION BLDG., Redstone Arsenal, ENG-041-076-57-105, HUNTSVILLE, ALA. Army Missile Center, Redstone Arsenal, Huntsville, Ala. Bids June 27, awarded June 29. CD 7/2, under LB.

▲ **O. B. Davis Constr. Co.**, 641 N. Market St., Chattanooga, Tenn., LB **$585,660**, est. $540,000; EAST RIDGE HIGH SCHOOL, CHATTANOOGA, TENN. Hamilton Co. Bd. Educ., Chattanooga, Tenn. Bids June 25. CD 6/12.

▲ **Southern Builders, Inc.**, 3355 Poplar Ave., Memphis, Tenn., LB **$1,565,796**; RESEARCH BLDG. at Clover Bottom Home for Feeble minded, for severely brain damaged patients, MEMPHIS, TENN. State Bldg. Comm. Nashville, Tenn. Bids June 25. CD 6/6.

MIDDLE WEST

HEAVY CONSTRUCTION—LB & CA

▲ **INDIANA**—State Hy. Comn., State House Annex, Indianapolis,

Ind.—**Calumet Paving Co.**, 96th and Zionsville Rd., Zionsville, Ind., CA **$903,048**, est. $1,013,388 (7 bidders) c. conc. base wid'n. bit. resurf. and c. conc. 5.169 mi. Road N 27 from SR 44 in Liberty to 1.1 mi. south Union-Wayne Co. line, F-616 (3) incl. 2 rein. con. girders and 1 rein.-con. slab structures extended at 3.9, 4.1 and 4.4 mi. north Liberty, F-616 (5), Contr. No. R-4142, Union Co.;

Ind.—**L. P. Cavett Co.**, 511 Shepherd Ave., Lockland, O., CA **$634,022**, est. $711,469 (5 bidders), bit. aggreg. on macad base 8.64 mi. Road 60 from just west of Campbellsburg to SR 56 west of Salem, S 622 (6), Contr. No. R-4143, Washington Co. Bids May 14. CD 5/27, under LB.

INDIANA — State Hy. Comn., State House Annex, Indianapolis,

Calumet Paving Co., 96th and Zionsville Rd., Zionsville, Ind., CA **$745,735**, est. $807,837 (8 bidders), c. conc. 3.184 mi. Road No. 63, F-305 (8); c. conc. 1.144 mi. Road 63, F-306 (1); c. conc.-0.64 mi. Road 234, S-557 (1), Contr. No. 4152 Crawfordsville and Vermillion Counties. Bids May 28. CD 6/7, under LB.

▲ **ILLINOIS**—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago,

Mayfair Constr. Co., 5660 N. Kedzie Ave., Chicago, Ill., CA **$3,188,624** Contr. E-1-B paving appurts., erecting precast concrete and concrete arch bridges 0.39 mi. west of St. Rte. 31 extending easterly east St. Rte. 25, Kane Co. Bids May 29. CD 6/6, under LB.

▲ **MICHIGAN**—State, Charles M. Ziegler, state hy. comr., Stevens T. Mason Bldg., Lansing, Bids opened 6/19,

Mich.—**Lewis & Frisinger Co.**, 1110 Harpst St., Ann Arbor, Mich., LB **$1,427,876**, est. $1,550,000 (17 bidders), 5.234 mi. dual conc. pavt. on M-37 and 1.883 mi. base widening and b. conc. on M-37 from North 3-Mile to Alpine Church Rd. M 41033 C1-R F 41033 C2-R (F 57 6), Kent Co.;

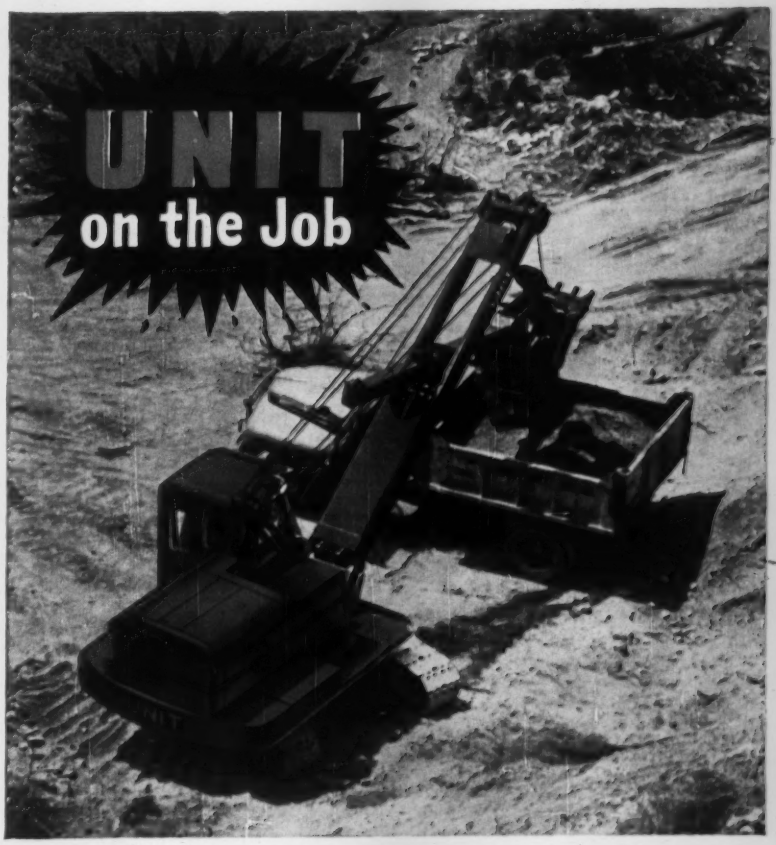
Mich.—**East Shore Asphalt Paving Co.**, Alpena, Mich., LB **$143,995**, est. $210,000 (8 bidders), 4.547 mi. part binder, aggreg. widening, curb and gutter; b. conc. on parts of US-27 Vanderbilt-Gayland, M 69-12 C3-R F 6901 2 C1-U (F 172 13) F 69012 C2-R (F 172 18), Otsego Co.;

Mich.—**Gordon's Asphalt Paving Co.**, 6800 East 11 Mile Rd., Center Line, Mich., LB **$88,525**, est. $100,000 (6 bidders), 3.568 mi. b. conc. M-17 from Inkster Rd. to Jim Daly Rd. M 82041 C1-R, Wayne Co.;

Mich.—**Hodgkiss & Douma**, Petoskey, Mich., LB **$91,055**, est. $110,000 (8 bidders), 1.638 mi. c. conc. base course widening and 24 ft 30 ft b. conc. US-31 from west of west limits of Charlevoix east and north to Hurlbut Ave, M 15011 C1 R M 15011 C2-U M 15012 C-1U, Charlevoix Co.;

Mich.—**Angell Constr. Co.**, 2300 N. Grand River, East Lansing, Mich., LB **$195,318**, est. $230,000 (8 bidders) 1.463 mi. c. conc. base wid'n., b. conc. US-27 U 33033 C1-UN (U 146 9) U 33033 C2-Un (U 68 10) U 33034 C1-U (U 68 10), Ingham Co. CD 6/16;

Mich.—**Globe Constr. Co.**, Kalamazoo, Mich., LB **$157,867**, est. $200,000 (8 bidders), 4.388 mi. various



SWING SPEED makes PAY LOADS!

Here's a UNIT ½ Yard Shovel doing a PRODUCTION DIGGING JOB in a gravel pit. UNIT owners like the ease of operation and the FULL VISION CAB for complete visibility. They also like the sturdy construction and the many mechanical features, plus the ECONOMICAL PERFORMANCE and LOW UP-KEEP which all add up to EARNING POWER. Why not investigate what UNIT can do for you — on YOUR next excavating and material handling job?

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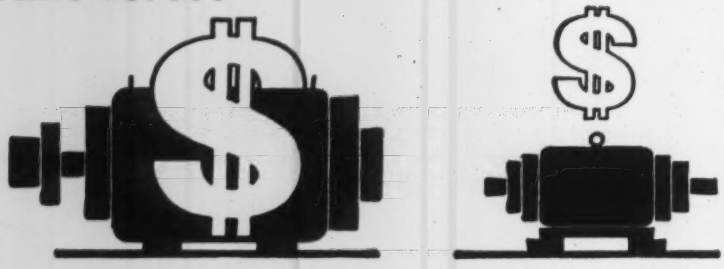
½ or ¾ YARD EXCAVATORS...CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL

All Models Convertible to ALL Attachments!

When electrically driven equipment calls for...



a special, costlier motor to start things

but only a low-cost motor to run them

Why not try this...

A National Torque Converter to give high starting torque | with your cost-saving motor to keep things moving

National Torque Converters give you "big motor" torque from small motor investment

Like a car in heavy traffic, the work-cycle of a lot of heavy, electrically-driven equipment is stop-and-go, stop-and-go.

If the motor is selected to take care of *running* requirements, it won't have the starting torque needed to pick up heavy loading fast. If the motor is selected for *starting* requirements, it is likely to cost considerably more—both to buy and to run.

The best answer is to install the more economical motor—and let it drive through a National Torque Converter. The converter will multiply the motor's torque for picking up the loads . . . ease the shocks and stresses of operation . . . bring economy in first cost and day-to-day service. National Torque Converters are available in a range of capacities from 100 to 1000 HP. For detailed technical information, just write:

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Pace-setters in the progress of industrial power transmission

paving incl. stone filled sheet asph., b. conc.; conc. base course wid'n. parts US-12 M-93 and M-106, M 38083 C1-U M 33091 C1-U M 38051 C2 R, Jackson Co.;

Mich.—**William Velting & Sons**, 3230 Dawes S.E., Grand Rapids, Mich., LB **$81,746**, est. $90,000 (10 bidders), 3.17 mi. grading, drainage structures and 22 ft, 46 ft aggreg. surf. course 3.01 mi. non-skid surf. treat. FAS Rte 1097 from M-66 west. CS 59-52 C2 (S 1097 2), Montcalm Co. CD 6/14.

▲ **Conbustion Eng. Co.**, 1537 Book Bldg., Detroit, Mich., CA **$1,091,275**, Contr. 2, sewage disposal plant, Warren, VAN DYKE, MICH. Warren Twp., Hildegarde M. Lowe, clk., 22720 Van Dyke Ave., Van Dyke, Mich. Johnson & Anderson, Inc., 1307 Pontiac State Bank Bldg., Pontiac, Mich., engr. CD 9/28/55.

BUILDINGS—LB & CA

▲ **Frank Messer & Sons, Inc.**, Paddock Rd., Cincinnati, O., CA **$3,717,700**; constr. 375 UNITS HOUSING 89 BLDGS. Findlater Gardens at Winton Terrace, CINCINNATI, O. Cincinnati Metropolitan Housing Authority, 595 Armory St., Cincinnati, O. Bids June 6, awarded July 1, CD 6/17 under LB.

R. W. Setterlin & Sons, 2000 Kenny Rd., Columbus, O., CA **$891,785**, LAW LIBRARY, COLUMBUS, O. Ohio State University, Columbus, O., Bids May 1, CD 5/8, under LB.

▲ **Banner Constr. Co.**, 4080 Park Fulton Oval, Cleveland, O., CA Est. **$12,000,000**, 438 HOMES in Rolling Ridge subdivision at Ridge and Selwick Dr., PARMA, O. Seltzer-Wickman-Stormes, Inc., 4080 Park Fulton Oval, Cleveland, O. Anderson & Dracon, 4517 Brookpark Rd., Cleveland 29, O., archts. Awarded May. CD 4/3/56.

▲ **Par Constr. Co.**, 10222 Superior Ave., Cleveland 6, O., Owner Builds. **$10,500,000**, 350 Ridgewood Country Club HOMES, Ridge and Ridgewood Dr., PARMA, O. Irving D. Robinson, 4900 Euclid Ave., Cleveland 3, O., archt.

▲ **L. G. Arnold, Inc.**, 201½ N. Dewey St., Eau Claire, Wis., CA **$1,097,600**, general contract SENIOR HIGH SCHOOL, CHIPPEWA FALLS, WIS. Bd. Educ., R. Halmstad, clk., Chippewa Falls, Wis. Lang & Raugland, 802 Wesley Temple Bldg., Minneapolis, Minn., archts. Bids June 20. CD 6/27, under LB.

▲ **Spence Bros.**, 417 McCoskry St., Saginaw, Mich., LB **$2,052,000**, general contract. SENIOR HIGH SCHOOL, PONTIAC, MICH., City, Monroe, M. Osman, secy., Pontiac School Dist., 40 Patterson St., Pontiac, Mich. Eberle M. Smith Assoc., Inc., 153 East Elizabeth St., Detroit 1, Mich., archt. Bids June 25. CD 6/11.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

Mo., St. Louis—RUNWAY—BA 7/30—City, Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, 12th Blvd. and Market St., Zone 3, strengthening overlay on instrument runway at Lambert-St. Louis Municipal Airport, in St. Louis County, $800,000. Horner & Shifrin, Shell Bldg., 1221 Locust St., Zone 3, engrs. CD 3/27.

BUILDINGS—SLC

▲ **Minn., Minneapolis**—WAREHOUSE—Northern States Power Co., 15 South Fifth St., soon lets contract warehouse addns. and remodel, 1600 Chestnut Ave. $1,500,000. Brandhorst & Leadholm, 7600 Hy. No. 7, archts. CD 1/31.

▲ **Minn., St. Paul**—HOSPITAL—Children's Hospital, Inc., W. H. Lang, pres. Hospital Bd., 311 Pleasant Ave., soon lets contract caisson work and rein.-con. fdn. for hospital addn. Total est. $1,250,000. Ellerbe & Co., E. 505 1st National Bank Bldg., archts. CD 7/25/55.

HEAVY CONSTRUCTION—LB & CA

▲ **MINNESOTA**—State Hy. Dpt., 1246 University Ave., St. Paul. Bids opened 6/29.

Minn.—**J. Barsness**, Glenwood, Minn., LB **$345,189** (16 bidders), base and bit. base between 2.2 mi. east of Akeley and Jct. TH 371 in Walker, Cass and Hubbard Counties.

Minn.—**Barton Contrg. Co.**, 411 Clifton Ave., Minneapolis, Minn., LB **$413,233** (4 bidders), base and plant mixed bit. surf. 3.1 mi. between west limits Minneapolis and Wilkshire Blvd. in Crystal, Hennepin Co.,

Minn.—**R. Minion**, Bingham Lake, Minn., LB **$470,048** (5 bidders), base and bit. base 13.1 mi. between TH 16 and TH 60 east of Wilder, Jackson Co.,

Minn.—**Woodrich Constr. Co.**, Hopkins, Minn., LB **$1,466,987** (7 bidders) grading, paving and shouldering 8 mi. between north with TH 14 at Owatonna and 1 mi. north of South Line of Rice Co., Rice and Steele Counties.,

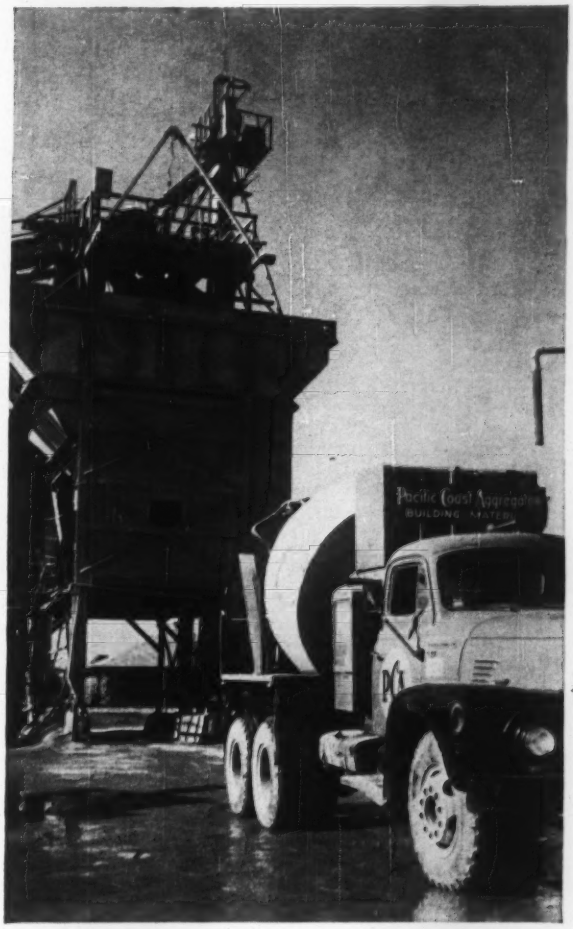
Minn.—**Kimmes & Bartelma Constr. Co., Inc.**, Hastings, Minn., LB **$262,555** (4 bidders), grading, base and plant mixed bit. surf. 1.4 mi. between north end of Mississippi River Bridge No. 5896 in Hastings and 0.25 mi. north of Jct. TH No. 10, Washngton Co. CD 6/13.

▲† **Myers Constr. Co. & Blake Sheet Metal**, Woods Bldg., 4214 Penn St., Kansas City, Mo., CA **$1,426,023** (8 bidders), 1,000 ton air conditioning unit, for Federal Office Bldg., 911 Walnut St., Proj. No. D.C. 283, PB 50-72-06, KANSAS CITY, MO. General Services Admin., Public Bldg. Admin., 2306 E. Banister St., Kansas City, Mo. Delta Eng. Co., 100 Pickwick Bldg., Kansas City, Mo., engr. Bids June 25, awarded July 3.

Irby Constr. Co., 817 S. State St., Jackson, Miss., CA Est. **$500,000**, constr. 700 mi. rural telephone lines in Johnson, Logan, Perry, Pope, Sebastian and Yell Counties, ARKANSAS. Western Arkansas Telephone Co., S. A. Lane, pres., 317 Main St., Russellville, Ark.

(Continued on page 112)

Pacific Cement and Aggregates, Inc. proves:



Pacific Cement and Aggregates has fifteen radio base stations, each handling dispatching from a batch plant. Shown above is the base station at Hayward, California (antenna at top of hopper). They now have 165 mixer trucks and 15 cars and pick-ups equipped with mobile radio.

Fewer trucks per job, less overtime with General Electric two-way radio

General Electric two-way radio means faster, more profitable service. That's why fast-growing Pacific Cement and Aggregates calls it "a valuable tool in selling ready-mixed concrete service to new customers."

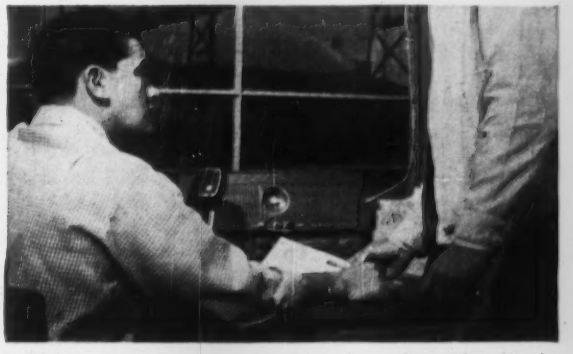
PCA has found that two-way radio cuts down the number of trucks needed on a given job. When faced with unavoidable delays or cancellations, radio permits PCA to switch trucks immediately to other jobs.

Two-way radio lets PCA keep customers up-to-date on job progress. And when customers make corrections on final loads, this information is relayed directly to the job site. Finishing crews do not have to be held on overtime.

If a breakdown takes place, you too can send repair equipment to the exact spot within minutes. Your servicemen, dispatchers and supervisors—tied together by General Electric two-way radio—will have full knowledge of overall operations at all times.

Find out how better communications can give you more profit from present equipment. Call your local General Electric Communications consultant, listed under "Radio Communication Equipment" in the Yellow Pages. Or write: General Electric Co., Communication Products Department, Electronics Park, Syracuse, N. Y.

Drivers at the job site can instantly report any changes in orders and are under the constant control of the dispatcher. Using G-E two-way radio, PCA has achieved tighter delivery schedules and greater customer satisfaction.



Each base station can communicate by radio with adjacent PCA plants, co-ordinating the movements of concrete trucks delivering out of more than one plant, or in those cases where two plants are providing concrete for one job.

GENERAL ELECTRIC

SUBMERSIBLE

SEWAGE and SUMP PUMP

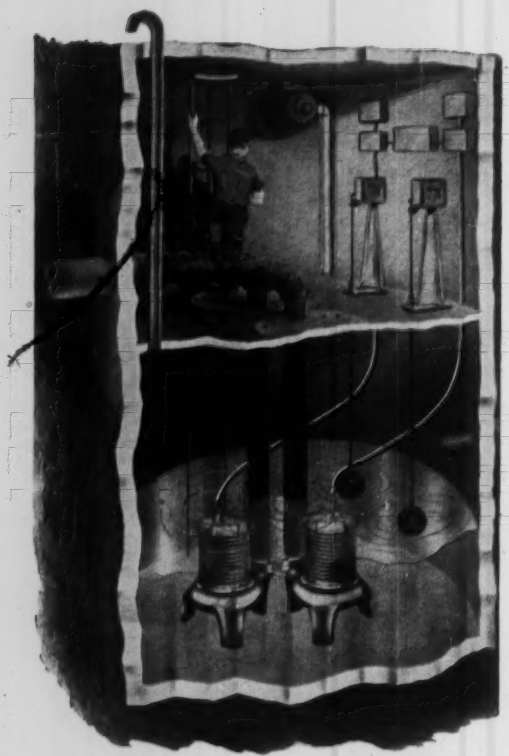


Illustration shows an economical installation which **does not require a pump house** to mar the landscape. This reduces the overall cost of the installation.

Engineered for

HEAVY DUTY DRAINAGE

DIFFICULT SEWAGE PUMPING

UNDERGROUND LIFT STATIONS

HIGHWAY UNDERPASS DRAINAGE

SUBMERGED OPERATION

Features

The new non-clog bladeless type impeller, the most efficient design for handling rags, stringy material and irregular solids with the liquids. 4" pumps will pass 2½" solids; 5" pumps will pass 4" solids.

The weil Submersible Non-Clog Sewage and Sump Pump is a pump designed to operate completely submerged under water. The only consideration where depth of setting is concerned is selection of the proper unit so that pump will have sufficient head to pump out of the sump. Pump can be installed and removed with low headroom above the wet pit. The submersible ejector is the same compact close coupled unit regardless of the depth of the pit.

Wide Range to Select From

The Submersible Ejector is available in discharges of 3", 4", 5" and 6" with heads to 60' and capacities to 2000 G.P.M.

Low Installation Cost

Simplicity in installation which requires only one piping connection and low maintenance due to the hermetically sealed motor assure economical installation and trouble-free operation.

Send for Bulletins SE-860 and SE-862.

See **weil** catalog in Sweet's 1957 and Domestic Eng. Cat. Dir. 1957.

weil PUMP COMPANY

1528 No. Fremont St. • **Chicago, Illinois**

(Continued from page 110)

C. H. Guernsey & Co., consult. engineers, 2701 N. Oklahoma St., Oklahoma City, Okla., engrs.

KANSAS—State Hy. Comn., State Office Bldg., Topeka, **Union Constr. Co.**, 1401 Fairfax Trafficway, Kansas City, Kan., CA **$574,901** (3 bidders), concrete base and b. conc. 2.851 mi., No. 69-46-f 083-3 (8), Johnson Co. CD 6/7.

▲ **Pioneer Gathering System, Inc.**, 418 Polk St., Amarillo, Tex, Owner Builds. **$3,750,000.** 70 mi. gas gathering lines in Val Verde, Schleicher and Sutton Counties, TEXAS. CD 6/28.

▲ **TEXAS**—State Hy. Comn., Austin,
Gilvin-Turner, Inc. & W. W. Braden, P. O. Box 2268, Amarillo, Tex., CA **$1,556,060**, c. conc. 1.23 mi. Hy. US 60 & 87, Proj. U.60 (12), Randall Co. Bids May 24. CD 5/29, under LB.

George Consolidated, Inc., Box 26035, Houston, Tex., CA **$664,925**, influent water mains, GALVESTON, TEX. City, City Hall, Galveston, Tex. Bids June 3. CD 6/20, under LB.

▲ **MONTANA**—State Hy. Comn., Helena,
Mont.—**F & S Constr. Co.**, 1300 Chicago St., Butte, Mont., CA **$469,044** (contract awarded subject to BPR concurrence) grade and drain 4.8 mi. Pablo-Kalispell Rd., Lake Co.,
Mont.—**Earl L. McNutt Co.**, Eugene, Ore., CA **$249,363**, grade, drain 6.2 mi. Helena-Flesher Pass-Lincoln Rd., Lewis & Clark Co.,
Mont.—**Bober Constr. Co.**, Minot, N. D., CA **$490,509**, grav., bit. surf., drain and constr. 57 ft. treated timber bridge on 12.3 mi. Miles City-North Dakota Line Rd., Fallon Co.,
Mont.—**R. J. Sundling**, Livington, Mont., CA **$351,061**, grav., bit. surf. 8.43 mi. St. Xavier Hardin Rd., Big Horn Co.,
Mont.—**Baltrusch Constr. Co.**, Havre, Mont., CA **$547,-714**, grav., bit. surf. 12.6 mi. Armells Creek-Hays-Harlem Rd., Blaine Co.,
Mont.—**Richardson Constr. Co.**, Miles City, Mont., CA **$140,210** plant mix oil 10.3 mi. Great Falls-Fort Benton Rd., Cascade and Chouteau Counties. Grand total $2,247,901. Bids June 28. CD 6/12.

MONTANA—State Hy. Comn., Helena,
Mont.—**Riedesel, Schye & Sullivan**, 2325 9th Ave. N., Billings, CA **$605,235**, constr. 825 ft. steel, concrete bridge over Yellowstone River on Terry-Brockway Rd. near town of Terry, Prairie So.,
Mont.—**Cahill-Mooney Constr. Co.**, 1220 E. Front St., Butte, Mont., CA **$129,305**, constr. 214.5 ft. steel, concrete overpass over Northern Pacific Railway and 172 ft. box culvert on Clark Fork on Upper Nine Mile Rd., Silver Bow Co. Bids opened June 28. CD 6/12.

▲ **WYOMING**—Wyoming Hy. Comn., J. R. Bromley, Supt., Cheyenne,
Wyo.—**Husman Bros. Inc.**, Sheridan, Wyo., CA **$297,680**, est. $256,880, grade, drain storm sewer combination curb and gutter median paving, base, plant mix and stone chip seal coat and misc. work 0.97 mi. Greybull Streets, Proj. No. F-034-5(1), Big Horn Co.;
Wyo.—**W. W. Clyde & Co.**, N. Main, Springville, Utah, CA **$1,060,506**, est. $1,187,906, grade, drain, S.M.S. four structural plate pipe and pipe arch culverts and misc. work 4.026 mi. of four divided constrs. on Rawlins-Sinclair Rd. Proj. No. I-091-4(1) Unit I, Carbon Co.;
Wyo.—**N. V. Lamb**, Lusk, Wyo., CA **$261,220**, est. $296,-225, grade, drain, base, sand seal, structural plate pipe, four structural plate stock passes and misc. work 7.633 mi. of Gillette-Savageton Rd., Proj. No. S-0300(1), Campbell Co.;
Wyo.—**Summit Constr. Co.**, 728 St. Anne, Rapid City, S. D., CA **$347,506**, est. $385,789, grade, drain, base, surf. treat., three structural plate pipe and misc. work 6.008 mi. Sussex-Linch Rd. Proj. No. 1022(1), Johnson Co.;
Wyo.—**Northwestern Eng. Co.**, 78 & Valley Hy., Denver, Colo., CA **$1,444,444**, est. $1,360,259, c. conc. 8.016 mi. on four-lane divided hy. on Cheyenne-W. Sheatland Rd. Proj. No. I-223(14), I-223(10), Unit II, I-223(17), Unit II, F-134(4) and F-223(20), Laramie Co.;
Wyo.—**Schmidt Constr. Co., Inc.**, 8150 W. 48th Ave., Arvada, Colo., CA **$856,530**, est. $1,019,203, 11.094 mi. base mix surf. course and misc. work; 6.623 mi. shoulders adjacent to concrete pavt. on four-lane divided hy. on Wheatland-Cheyenne Rd. Proj. I-223(14), I-223(16), Unit II, I-223(17), Unit II, F-134(5), F-223(2), F-0167(3), Laramie Co.;
Wyo.—**Carl E. Nelson Constr. Co., Inc.**, Logan, Utah, CA **$340,871**, est. $346,698, base course surf., plant mix surf. course, stone chip seal coat and misc. work 3.691 mi. Jackson-Moran Rd. Proj. No. F-010-4(1), Teton Co.;
Wyo.—**LeGrand Johnson Constr. Co., Inc.**, Logan, Utah, CA **$242,513**, est. $287,517, base, plant mix, stone chips and misc. work 5.11 mi. Auburn south road, Proj. No. S-1205(1), Lincoln Co.;
Wyo.—**Stanley H. Arkwright, Inc.**, 1200-6th Ave. N., Billings, Mont., CA **$589,743**, est. $683,372, grade, drain, special embankment and misc. work 6.985 mi. four-lane divided hy. on Evanston-Ft. Bridger Rd., Proj. No. I-091-1(1) Unit I, Unica Co. Grand total $5,-441,013. Bids June 24, awarded June 25. CD 6/18.

BUILDINGS—LB & CA

Nutrena Mills, subsidiary of Cargill Inc., J. C. North, pres., Wayzata, Minn., Owner Builds. **$500,000** EXPERIMENTAL RESEARCH CENTER (livestock foods), 7 mi. W of Anoka, incl. 12 to 17 bldgs. and living quarters, ANOKA, MINN.

D. L. Witcher, Inc., 500 Builders Exchange Bldg., Minneapolis, Minn., CA **$640,000.** 1 story MANUFACTURING PLANT addn., 125 Eighth St. S.E.,

(Continued on page 114)

One of the B-80 dumpers operated by Morse Sand & Gravel Company, Inc., of Attleboro, Mass.

two gravel-hauling dumpers supply 20 ready-mix trucks

"Our two Mack dumpers operate nine hours a day supplying gravel for our fleet of 20 ready-mix trucks. Averaging six round trips an hour over our own roads, these Macks have hauled over 350,000 tons in the last six months. Continuous operation of these two dumpers is vital to us. That's why we chose Macks . . . and they've more than lived up to their reputation. So far, we've had only routine maintenance and service to contend with." This is the experience of Mr. Alfred H. Morse, president of Morse Sand & Gravel.

Macks are universally acknowledged for their outstanding performance, operating economy and stamina. On-the-job operating reports, like Mr. Morse's, show why.

Want more proof? Let your Mack representative show you the performance records of other Mack users in your area—operators who found out how much they can profit by using the best. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

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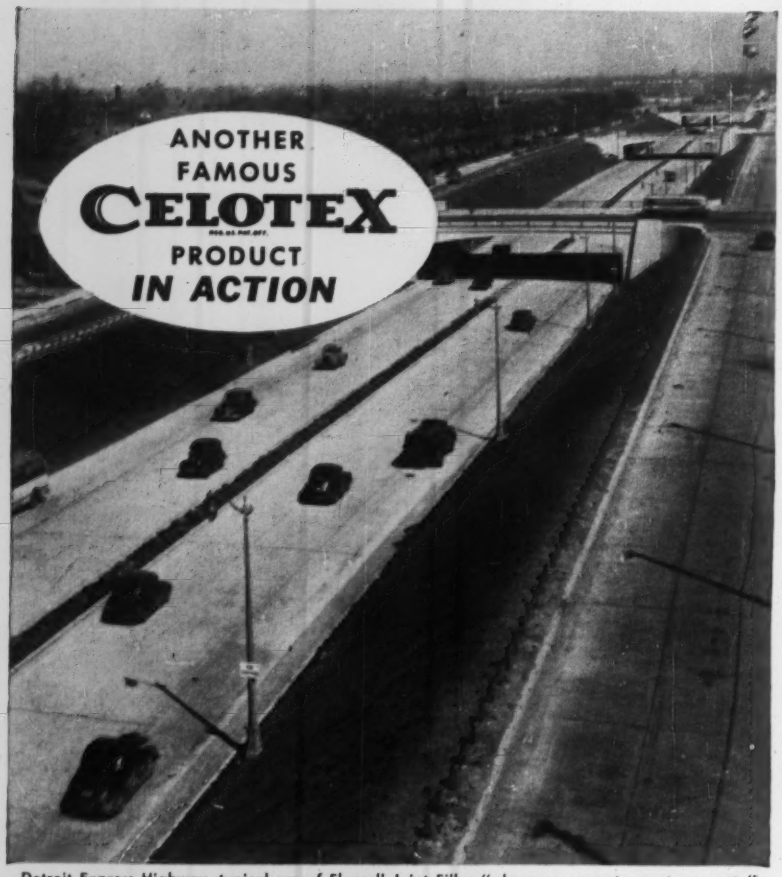

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Men meeting today's road-building challenge know an inch can be a chasm in concrete highway construction. They like the better combination of performance characteristics you get with Flexcell Joint Filler. You'll like its low installation and maintenance cost, too.

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Flexcell Joint Filler bonds firmly to concrete, compresses without extruding. Re-expands to keep joints filled, preventing intrusion of dirt and stones. Uniform asphalt impregnation, 35% by weight minimum. Unaffected by temperature extremes. Tough, rigid, light in weight. Easy to fabricate and install. Delivered to your specifications.

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120 South La Salle Street • Chicago 3, Illinois

(Continued from page 112)

MINNEAPOLIS, MINN. Electric Machinery Manufacturing Co., 800 Central Ave., Minneapolis, Minn. CD 5/22.

Engelen Corp., Springfield, Minn., LB **$550,200** (7 bidders), general contract, SERVICE BLDG., at Willmar State Hospital, WILLMAR, MINN. State, Dpt. Admin., 19 State Capitol, St. Paul, Minn. Bids June 26, CD 6/5.

Schneider Bros. Constr. Co., 421 W. Missouri St., Kirksville, Mo., CA **$667,000**, 2 story HEALTH and PHYSICAL EDUCATION BLDG. (Field House), KIRKSVILLE, MO. Northeast Missouri State Teachers College, Bd. Regents, E. E. Swain, secy., Baldwin Hall, Kirksville, Mo., Bids June 4. CD 6/12, under LB.

H. B. Deal & Co., Inc., 5517 Manchester Ave., St. Louis 10, Mo., CA Est. **$900,000**, general work, 3 story, bsmnt. 126 x 165 ft. brick or granite stone, Hyadite blocks, steel, concrete ENGINEERING LABORATORY BLDG., on campus east of Cupples 11 Shops, ST. LOUIS, MO. Washington University, Ethan H. A. Shepley, chancellor, Lindell and Skinker Blvds., St. Louis 5, Mo. Bids June 6. CD 6/4.

▲ **Lecoutour Constr. Co.**, 1419 Hampton Ave., St. Louis 10, Mo., LB **$1,235,134**, 3 story, Carr Lane SCHOOL, Jefferson Ave., Cole, Carr and 23rd Sts., ST. LOUIS, MO. Bd. Educ., George H. Fletcher, comr. School Bldgs., 911 Locust St., St. Louis 1, Mo. Bids July 3. CD 6/7.

† **King Constr. Co.**, 1919 Taylor St., P. O. Box 39, Texarkana, Tex., CA **$610,472**, WAREHOUSE rehabilitation, AMARILLO, TEX. Pantex Ordnance Plant, c/o Mason & Hangar-Silas Mason Co., Inc., Box 647, Amarillo, Tex., for Atomic Energy Comn., Box 5400, Albuquerque, N. M. Bids May 22.

▲† **William & Dunlap**, 7722 Eastland St., Dallas, Tex., LB **$6,109,000**. brick veneer con. 460 HOUSING UNITS, Webb Air Force Base, ENG-41-369-57-24, BIG SPRING, TEX. Procurement Officer, Webb Air Force Base, Big Spring, Tex. Bids June 2. CD 6/25.

▲ **J. C. Boespflug Constr. Co.**, Dooly Bldg., Salt Lake City, Utah, LB **$1,786,716**, est. $1,540,000. 1 story, 35,000 sq. ft., 50 bed general HOSPITAL; 20,000 sq. ft. in rehabilitation center, THERMOPOLIS, WYO. Hot Springs County Hospital, Court House, Thermopolis, Wyo. Bids June 27. CD 6/4.

FAR WEST

HEAVY CONSTRUCTION—BA

▲† **California**—BA 7/25—U. S. Eng., 1209 8th St., Sacramento, levee constr. and stone protection left bank Sacramento River Tisdale Weir to Sutter Bypass, incl. 183,500 cu. yd. common excav., Sutter Co., $1,750,000-$2,750,000. CD 10/13/55.

BUILDINGS—BA

Calif., Los Angeles—CAFETERIA—BA 8/7—State Div. Architecture, 1100 S. Grand Ave., 1 story, 32,000 sq. ft. cafeteria, rein.-con. fdns., at Los Angeles State College of Applied Arts & Sciences, San Bernardino Freeway Campus, W.O. 3719GC-39. $798,400. Plans deposit $50. CD 4/26/56.

▲ **Wash., Seattle**—GENERATING UNIT, etc.—BA 8/13—University of Washington, furnish, erect new steam generating unit and auxiliary equipment for $1,900,000 central boiler plant. Plans deposit $75. Extended date, Bouillon & Griffith, 1411 4th Ave., Zone 1, consult. engrs. CD 5/22.

BUILDINGS—SLC

Wash., Seattle—DORMITORY, etc.—Seattle Pacific College, 3307 3 Ave. W., soon lets contract 3 story, bsmnt., rein.-con. women's dormitory, four 1 story masonry duplex houses and alterations to cafeteria. $550,000. W. G. Brust & Assocs., Republic Bldg., Zone 1, archts. CD 4/17/56.

HEAVY CONSTRUCTION—LB & CA

▲† **Mittry Constr. Co.**, 2960 Marsh St., Los Angeles, Calif., LB **$10,538,544** (3 bidders) constr. Painted Rock Reservoir Dam and appurtenances at Gila River Basin, Gila Ben, ENG-04-353-57-41, ARIZONA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids June 21. CD 6/14.

▲ **ARIZONIA**—State Hy. Dpt., 17th Ave. and Jackson St., Phoenix,

Ariz.—Rogers Constr. Co., P. O. Box 1408 ,San Diego 12, Calif., CA **$1,061,618** (4 bidders), grading, draining 4-lane divided hy. 16.4 mi. (Cordes Jct. Flagstaff Hy.) (Job in 3 units): IN-I 003-3(2) Unit II-AFE 7912, Yavapai and Coconino Counties; CA **$622,692** (2 bidders) grading, draining 16.4 mi. (Cordes Jct.-Flagstaff Hy.) IN-1 003-3(2) Unit III AFE 7912 Yavapai and Coconino Counties;

Ariz.—Copper State Constr. Co., P. O. Box 863, Mesa, Ariz., CA **$82,344** (7 bidders), grading, draining 16.4 mi. (Cordes Jct.-Flagstaff Hy.) In-I 003-3 (2) Unit 1-AFE 7912, Yavapai and Coconino Counties. Grand total $1,766,654. Bids June 19. CD 6/12.

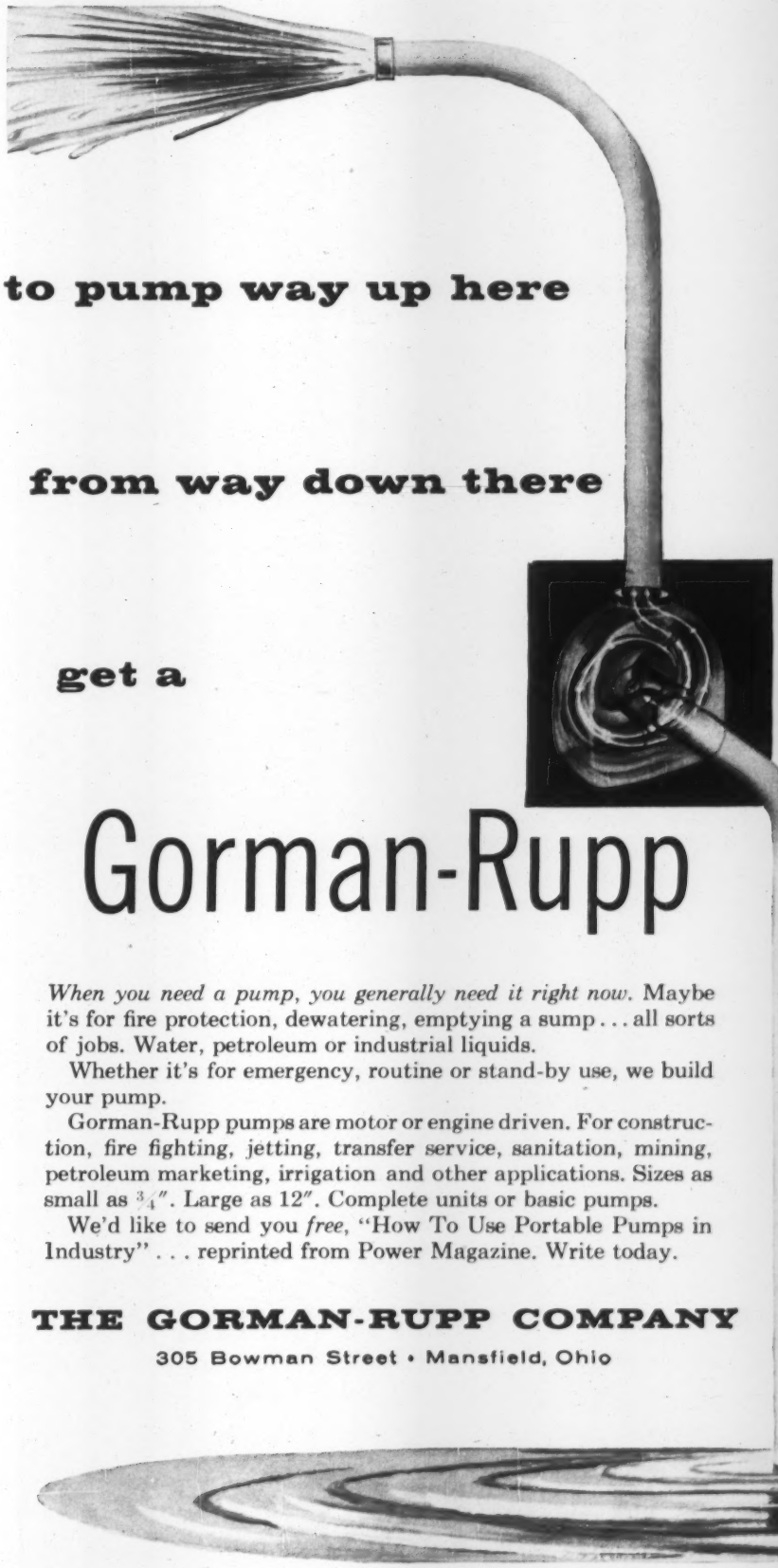
CALIFORNIA—State Dpt. P. Wks., 1120 N. St., Sacramento,

Walter Maxwell Co., 634 S. Western Ave., Los Angeles, Calif., CA **$852,046**, grading, surf. 0.6 mi. 4 lane hy. on new alignment on Hy. 60 across Santa Ana River Bridge at west city limits of Riverside and constr. concrete girder bridge. Riv. 19A. Riv., Riverside Co. Bids June 20, awarded June 28. CD 6/27, under LB.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles, Bids opened 6/27,

Fredericksen & Kasler, 212 13th St., Sacramento, Calif., LB **$5,750,655** (13 bidders) grading, surf. 29.3 mi. 4 lane divided freeway on new alignment U.S. 66/91

(Continued on page 117)



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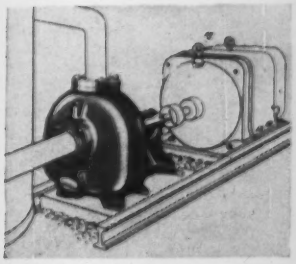
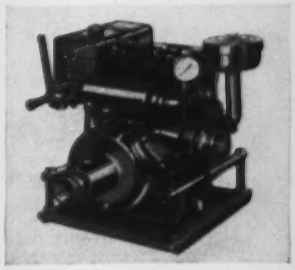
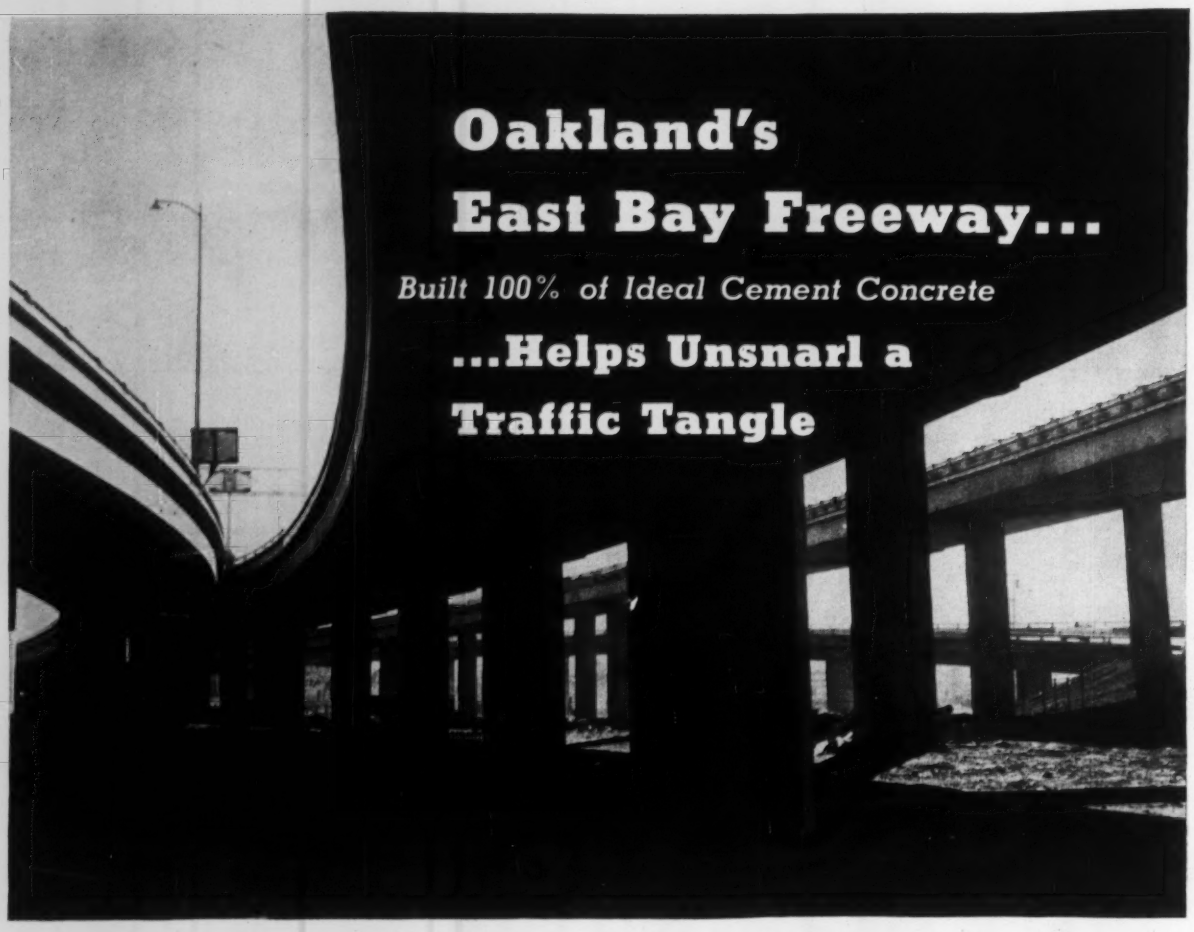


"O Series" Petroleum Products Pumps: Centrifugals that prime. Straight-in suction. No check valve. Powered or basic units.

New "80 Series" Lightweight Pumps: Self-priming. Straight-in suction. No check valve. Sizes 1½", 2" and 3". See cutaway at left.



Dual-Fire Fighter Pumps: Fight fire direct or relay enough water to pumper for two ½" nozzles at 100 lbs. Quick prime. Portable.



To solve a growing traffic problem at the east end of San Francisco's Bay Bridge, Oakland's East Bay Freeway has been developed.

This multilevel, massive concrete structure is a joint venture of Grove, Shepherd, Wilson, and Kruge, general contractors of Seattle, Washington.

Reinforced concrete was the logical construction material for the East Bay Freeway because of its pleasing appearance, first-cost economy, freedom from maintenance, and ready availability of materials regardless of the rate of use. Portland cement for the job was furnished from Ideal's Redwood City plant, strategically located on deep water directly across San Francisco Bay from the construction site.

For freeway and elevated highway construction jobs everywhere, reinforced concrete should always receive consideration wherever the elements of beauty, long-range economy, and availability of materials are important.

PORTLAND IDEAL CEMENT

IDEAL CEMENT COMPANY

14 Plants and 2 Cement Terminals Serving the Nation, Coast to Coast and Border to Border

(Continued from page 114)

between Victorville and Barstow and constr. 6 structure VIII Sbd-31, C.D.E.F. San Bernardino Co. CD 5/24.

Papac Constr. Co., 604 N. Montebello Blvd., Montebello, Calif., CA **$948,612**, Line C and Part of Line A, Storm Drain Bond Issue Proj. 65, Unit No. 2, Dorchester Ave., Storm Drain, LOS ANGELES, CALIF. Los Angeles County Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids June 14, awarded June 25. CD 6/25, under LB.

▲† **George A. Fuller Co.**, 3100 W. 8th St., Los Angeles, Calif., LB **$3,012,290**, est. $3,500,000. (5 bidders) constr. special tests track facilities, Edwards Air Force Base, ENG-04-353-57-75, MUROC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids June 26. CD 6/10.

BUILDINGS—LB & CA

▲† **Paul Hardeman, Inc.**, 11558 Tennessee St., Los Angeles, Calif., CA **$1,205,117**, 60x92 ft. REACTOR BUILDING, reactor vessel, etc. for Spert II Facility at National Reactor Testing Station, Contr. AT-(10-1) 887, ARCO, IDAHO. Atomic Energy Comn., Idaho Operations Office, Idaho Falls, Idaho. Bids June 21. CD 6/28.

▲ **Bettilyon, Inc.**, 201 E. 3rd St., Salt Lake City, Utah. CA Est. **$1,000,000**, 100,000 sq. ft. addn. to GUIDED MISSILE LABORATORY, near Salt Lake City Airport, SALT LAKE CITY, UTAH. Sperry Gyroscope, Div. Sperry Rand Corp., 248 N. 21st St. W., Salt Lake City, Utah. CD 11/23.

▲ **Talboe & Harlin Constr. Co.**, 3091 Main St., Salt Lake City, Utah. CA Est. **$2,080,000**, 5 story BANK, SALT LAKE CITY, UTAH. Federal Reserve Bank of San Francisco, Sansome and Sacramento Sts., San Francisco, Calif. Bids June 4. CD 6/12, under LB.

† **Wilson, Hockinson & Cantrall**, P. O. Box 944, Albuquerque, N. M., LB **$809,068** (7 bidders) DORMITORY and DINING FACILITIES, BU 603-352 (f), FLAGSTAFF, ARIZ. Bureau Indian Affairs, P. O. Box 1777, Albuquerque, N. M. Bids June 25. CD 4/19.

Contractors, Inc., 1101 N.E. 21st Ave., Portland, Ore., LB **$807,636** (6 bidders), Bridlemile SCHOOL, PORTLAND, ORE. Portland School Dist., 631 N.E. Clackamas St., Portland, Ore. Johnston & Hoch, Concord Bldg., Portland, Ore., archts.

▲ **La Mirada Woods Bldg. Co.**, 1166 E. 58th St., Los Angeles, Calif., CA **$1,300,000**, 1,085-1,097 sq. ft., 130 DWELLINGS, NORWALK, CALIF. Cal-Tex Investment Co., 1166 E. 58th St., Los Angeles, Calif.

ALASKA

HEAVY CONSTRUCTION—LB & CA

† **Pacific Alaska Contractors**, Box 676, Anchorage, Alaska, CA **$910,668**, 155x170 ft. Air National Guard Hangar, 20x30 ft. masonry pumphouse and 120,000 gal. steel storage tank with 100x160 ft. apron, Inv. 57-85, ANCHORAGE, ALASKA. U. S. Eng., 4735 E. Marginal Way, Seattle, Wash. Bids June 19. CD 6/28, under LB.

PROPOSED PROJECTS

SEWERS, WASTE DISPOSAL

▲ **Kan., Mission** — Turkey Creek Sewer Dist., 6915 Johnson Dr., Mission, defeated bonds June 22, sewerage sys. and treatment plant, **$3,000,000**. Black & Veatch, 1500 W. Meadow Lane, Kansas City, Mo., consult. engrs. CD 6/4.

STREETS AND ROADS

COLORADO—State Hy. Dpt., 4201 E. Arkansas St., Denver,

Adams Co.—road constr. State Hy. No. 2 between Adams City and Barr Lake, Colo. Fed. Aid Primary Interstate Proj. I-003-1 (10) **$120,000.**

State Hy. 79, Bennett-North, Fed. Aid Sec. Proj. C 12-0079-06, **$100,000.**

Alamosa, Conejos and Rio Grande Counties—right of way and constr. State Hy. 371, Carmel School-Northwest, Alamosa, Colo. Fed. Aid Sec. Proj. S 0088 (4), **$250,000.**

Alamosa Co.—right of way, constr., paving State Hy. 17, Alamosa-La Jara, Colo. Fed. Aid Primary Proj. BF 025-2 (1), **$650,000.**

Arapahoe Co.—paving State Hy. 185, Denver-South, Colo. Fed. Aid Primary Interstate Proj. I 092-2 (4) **$1,650,000.**

constr. and paving State Hy. 87 South Broadway-Englewood South, Colo. Fed. Aid Urban Proj. US 0162 (2) **$250,000.**

State Hy. No. 87, Littleton Blvd., Littleton, Colo. Fed. Aid Sec. Proj. S 0162 (3), **$150,000.**

right of way and constr. State Hy. No. 70 Hampden Ave.-Lowell to Sheridan, Denver, Colo. Fed. Aid Sec. Proj. S 0060 (1) **$300,000.**

Archuleta Co.—right of way, constr. paving State Hy. 10 Piedra River-West, Colo. Fed. Aid Primary Proj. F 022-2 (13) **$850,000.**

constr. and paving State Hy. 10, Pagosa Springs East, Colo. Fed. Aid Primary Proj. F 022-2 (14) **$300,000.**

Baca Co.—stab. paving State Hy. 59, south of Springfield, Colo. Fed. Aid Primary Proj. BF 028-2 (6) **$300,000.**

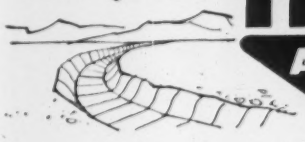
Bent and Otero Counties—right of way, constr. and paving State Hy. 6, Las Animas-West Colo. Fed. Aid Primary Proj. C 09-0006-21 **$100,000.**

Bent Co.—right of way, constr., paving State Hy. 6 between Fort Lyons and Las Animas, Colo. Fed. Aid Primary Proj. BF 001-5 (10) **$650,000.**

(Continued on page 120)

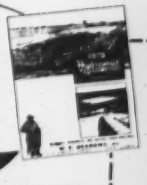
NOW... provide *COMPLETE* containment of water, wastes, brines and sludges with

SEALTIGHT **Hydromat** ASPHALT LINERS



Pre-fabricated "HYDROMAT" Asphalt Liners provide the ideal liner for all domestic, industrial and recreational facilities where the containment of water, wastes, sludges, brines, etc. demand a very efficient, economical and impervious lining material. "HYDROMAT" is quickly and easily installed as a monolithic liner with mechanically sealed joints . . . will expand and contract with soil movements without rupturing or breaking the seal. Installed over (exposed) or under earth, concrete, gunite, steel or other materials . . . provides the practical answer to the problem of re-lining old, cracked concrete or gunite linings. "HYDROMAT" may be safely used for the containment of potable water in clear well construction and its ruggedness and durability permit its use as a fully exposed lining in large reservoirs to depths exceeding 50 feet. "HYDROMAT" is available in three thicknesses, ½", ¼" and 5/32", in 4' widths and lengths up to 15' . . . longer lengths available on special request.

For complete installation and technical data write today for your copy of the "HYDROMAT MANUAL".



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Highway Builders...don't neglect

This is how steel pipe snow melting systems can keep strategic highway areas free from snow and ice as illustrated by this effective installation on a toll plaza of the Indiana Turnpike.

The attractive approaches to the New York Bus Terminal, at left, are winter-proofed with a steel pipe snow and ice melting system. Photo at right illustrates how effectively heavy snow is melted from it.

steel pipe snow melting

for real "all weather" highways in the national road program.

The continued mobility of America is now assured by the 13 year—33 billion dollar—41,000 mile National Interstate Highway System program.

With 65 million cars, busses and trucks already on the highways and streets, it is essential that the new interstate system include every modern feature not alone for today but for decades to come.

Automatic steel pipe *Snow Melting* is one of these essentials if the new highways are to be truly "all weather" arteries . . . at strategic points of entrance and egress, overpasses, ramps, bridge floors and elevated sections where snow or ice may impede traffic flow or cause hazardous conditions.

Already steel pipe snow melting systems have been installed with great success in such public works as at the toll gates of the new Indiana Turnpike, the ramp approaches to the New York Bus Terminal and Staten Island Ferry Building, and in countless loading decks, plant approaches and airport hangar aprons. For such installations *steel pipe is first choice* because its economy and proved reliability make an investment in automatic snow removal practical, just as it is for electrical raceways, steam and air lines, radiant heating, plumbing and fire sprinkler systems.

Send for the free booklet, "Steel Pipe Snow Melting and Ice Removal Systems."

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STEEL PIPE RESEARCH

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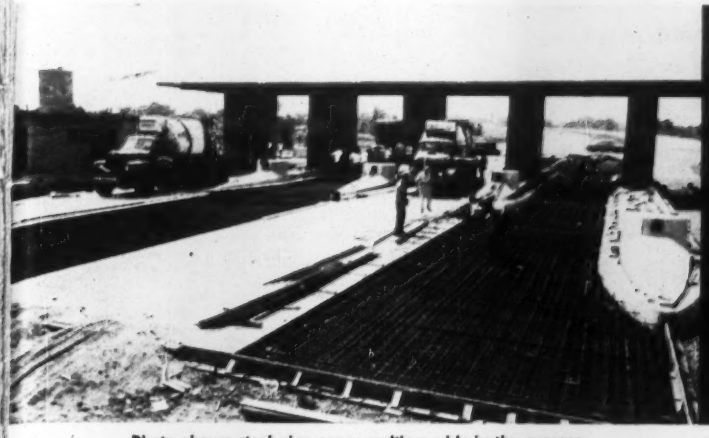

Photo shows steel pipe snow melting grids in the process of installation on the toll plazas and plaza approaches of the Indiana Turnpike.

There'll be no traffic problem from snow or ice on the Staten Island Ferry ramp thanks to this modern steel pipe melting system. Photo shows installation of grids.

(Continued from page 117)

stab., paving State Hy. No. 101, Las Animas-South, Colo. Fed. Aid Sec. Proj. S 0013 (2) $150,000.

Boulder and Larimer Counties—resurf. State Hy. 66 Lyons-Estes Park, Colo. Fed. Aid Primary Proj. C 06-0066-02, $300,000.

Boulder Co.—right of way, constr. State Hy. 72 Pinecliffe-West to State Hy. 119, Fed. Aid Sec. Proj. C 07-0072-09, $75,000.

constr. State Hy. 119, Boulder-Longmont, Fed. Aid Sec. Proj. S 0085 (2) $350,000.

paving State Hy. 7, Boulder-Northwest, Fed. Aid Sec. Proj. S 0087 (4), $185,000.

Chaffee Co.—constr., paving State Hy. 15 Buena Vista-South, Colo. Fed. Aid Primary Proj. F 001-3 (10), $550,000.

Cheyenne Co.—constr., paving State Hy. 8, Wildhorse-East and West, Fed. Aid Primary Proj. F 017-3 (6) $400,000.

Clear Creek Co.—stab., paving State Hy. 91, Silver Plume southwest, Fed. Aid Primary Proj. BF-012-1 (4), $400,000.

right of way, constr., State Hy. 2, Idaho Springs East and West, Idaho Springs, Fed. Aid Primary Proj. F 005-3 (11) $1,000,000.

Costilla Co.—paving State Hy. No. 10, Fort Garland-Russell, Fed. Aid Primary Proj. F 022-3 (3) $300,000.

Crowley Co.—stab., paving State Hy. 71, Ordway North, Fed. Aid Sec. Proj. S 0023 (7) $100,000.

Custer Co.—right of way, constr. State Hy. 96, Silver Cliff-East, Fed. Aid Sec. Proj. S 0016 (13), $200,000.

Delta Co.—right of way, constr., surf. State Hy. 65, Cedaredge-Northwest, Fed. Aid Sec. Proj. S 0131 (3) $300,000.

Denver Co.—constr., paving Valley Hy. Fed. Aid Primary Interstate Proj. I 092-2 (1) $3,450,000.

right of way constr., paving Colorado Blvd.-Cherry Creek-North, Denver, Fed. Aid Urban Proj. U-029-1 (3) $820,000.

Eagle and Routt Counties—right of way, constr. surf. State Hy. 131, McCoy-North, Fed. Aid Sec. Proj. S 0121 (13), $250,000.

Eagle Co.—right of way, constr., paving between Dotsero-Gypsum, Fed. Aid Primary Proj. BF 001-2 (5), $450,000.

stab., paving State Hy. 82, Basalt-North Fed. Aid Sec. Proj. C 44-0082-03, $120,000.

Elbert Co.—right of way, constr., grav. surf. State Hy. 86, Kiowa-East, Fed. Aid Sec. Proj. S 0028 (6), $200,000.

El Paso and Pueblo Counties—paving State Hy. No. 1 between Pueblo and Fountain, Fed. Aid Primary Interstate Proj. I 092-2 (2) $1,550,000.

El Paso Co.—constr., paving State Hy. No. 4, Colorado Springs-East, Fed. Aid Primary Proj. F 017-2 (2), $550,000.

constr., paving State Hy. 11, Colorado Sorings, Fed. Aid Primary Interstate Proj. I 092-2 (5) $4,400,000.

surf., bridges and approaches State Hy. 217, Peyton-North, Fed. Aid Sec. Proj. C 04-0217-01 $75,000.

Fremont Co.—resurf. State Hy. No. 6 between Cotapaxi and Parkdale, Fed. Aid Primary Proj. BF 001-3 (11) $396,000.

constr., paving, State Hy. 115, Penrose-North, Fed. Aid Primary Proj. F 031-1 (2) $500,000.

Grand Co.—betterments on State Hy. 2, Byers C non, Fed. Aid Primary Proj. C 53-0002-24, $75,000.

right of way, constr., paving State Hy. No. 2, between Kremmling and Parshall, Fed. Aid Proj. F 005-2 (13) $470,000.

Gunnison Co.—right of way, constr., surf. State Hy. No. 149, Iola-Lake City, Fed. Aid Sec. Proj. S 0117 (6), $200,000.

Huerfano Co.—right of way, constr., paving State Hy. No. 1, Fed. Aid Primary Interstate Proj. I 092-3 (6), Walsenburg $600,000.

Jackson Co.—right of way, constr. State Hy. No. 14, Walden-Southwest, Fed. Aid Sec. Proj. S 0115 (6), $250,000.

Jefferson Co.—right of way, constr. State Hy 74, Evergreen & Kittredge, Fed. Aid Sec. Proj. S 0098 (2) $365,000.

right of way, stab. paving State Hy. No. 73, Conifer and Evergreen $150,000.

Kiowa Co.—stab. paving State Hy. 96, Chivington-Towner, Fed. Aid Sec. Proj. S 0016 (14) $400,000.

Kit Carson and Cheyene Counties—right of way, constr. State Hy. 51, Cheyenne Wells-Burlington Fed. Aid Sec. Proj. S 0001 (26), $350,000.

LaPlata Co.—right of way, constr. State Hy. 172 Ignacio-Southeast, Fed. Aid Sec. Proj. S 0154 (11) $230,000.

right of way, bridge and constr. State Hy. 140, Fort Lewis-Southwest, Fed. Aid Sec. Proj. S 0097 (3), $100,000.

Larimer Co.—right of way, constr. paving State Hy. No. 1, Fort Collins-Loveland Fed. Aid Primary Proj. C 06-0001-15. $450,000.

right of way, constr: paving State Hy. 123 from Wyoming line-South, Fort Collins, Fed. Aid Primary Proj. F 004-1 (17), $500,000.

Las Animas Co.—right of way, constr. and paving State Hy. No. 1, Trinidad, Fed. Aid Primary Interstate Proj. I 092-3 (5), $850,000.

stab. and paving State Hy. 100 Bashoar Junction-East, Fed. Aid Sec. Proj. S 0002 (19), $300,000.

Lincoln Co.—paving State Hy. No. 71, Limon-South, Fed. Aid Sec. Proj. S 0027 (5), $220,000.

Mesa Co.—constr., paving no North Ave. State Hy. No. 4, Grand Junction, Fed. Aid Urban Projs. U-001-1 (14), $150,000.

paving State Hy. 65 Mesa-West, Fed. Aid Sec. Proj. C 08-0065-08, $100,000.

right of way, constr. State Hy. 145, Whitewater Bridge, Fed. Aid Sec. Proj. S 0141 (4), $160,000.

(Continued on page 122)

New Optical Plummet Built into Gurley Transit Saves Set-up Time, Improves Accuracy on Windy Days

Years ago, Gurley introduced lightweight instruments to combat wind vibrations. Now Gurley further beats the wind problem with an optical plummet *built into* the instrument.

The new Gurley Optical Plummet Transit eliminates swing and sway of the cord and plumb—always time-consuming and exasperating on a windy location, and inaccurate as well. Positive accuracy of set-up is assured with the Gurley Optical Plummet.

The new Gurley transit is furnished with a tripod with built-in shifting head, and allows a two-inch shift of the instrument over the point. This provides greater latitude in initial set-up.

Gurley's new Optical Plummet Transit offers one of the advantages of the optical-reading theodolite *plus* the desirable features of simplicity and universal acceptance of the American transit. For further details, write for Bulletin OP-57.

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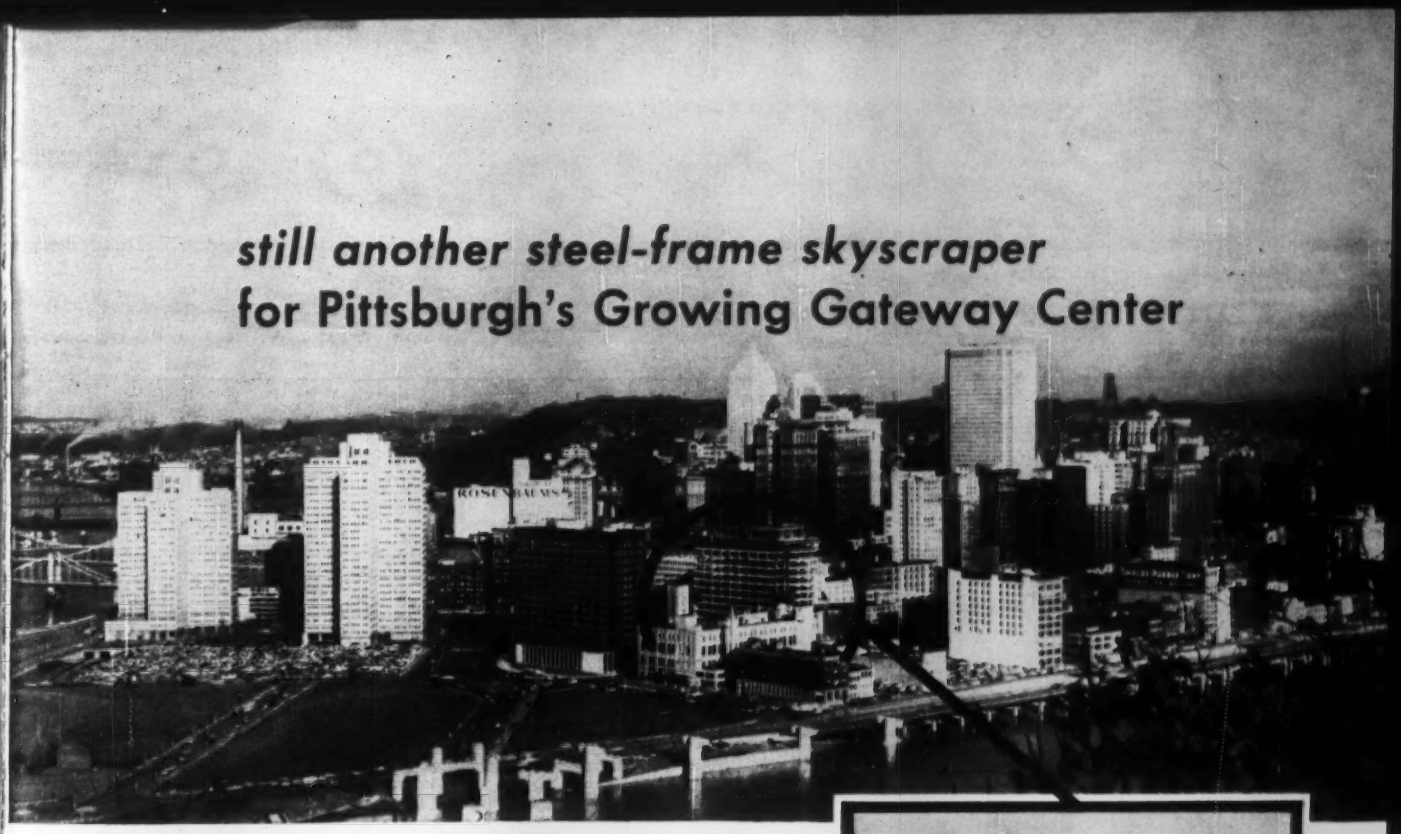


still another steel-frame skyscraper for Pittsburgh's Growing Gateway Center

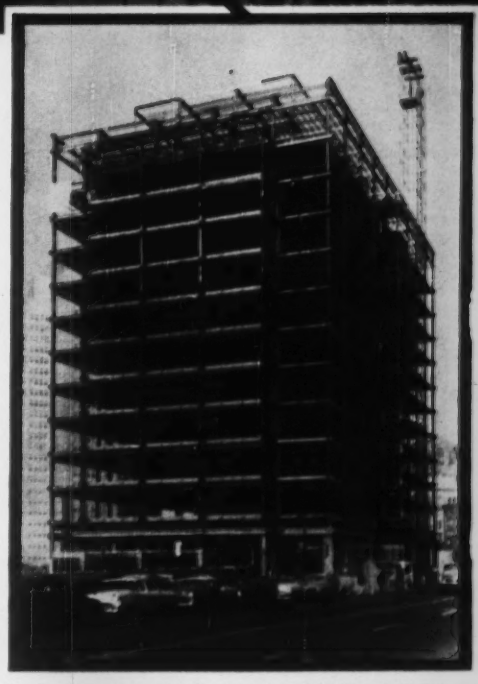
Structural steelwork for fifth and newest building also fabricated and erected by American Bridge

As recently as eight years ago, the parklike area in the foreground of the picture above and the large buildings bordering it just didn't exist. Today, Pittsburgh's Point Park and its growing Gateway Center have captivated even the most imaginative of our progressive city planners.

All five buildings built thus far in this newly developed area are steel-frame structures fabricated and erected by American Bridge. They are the three stainless steel skyscrapers known as Gateway Buildings 1, 2 and 3; the State Office Building; and the Western Pennsylvania Headquarters Building of the Bell Telephone Company, which is still under construction.

The new Bell Telephone Headquarters is a 12-story office building, 99′ x 208′, consisting of beam and column framing for 1st to 12th floors, mezzanine floor, attic floor, main roof and penthouse roof. A total of 2,350 tons of steel was involved. Field connections were made with high strength steel bolts except in the case of minor members, where ordinary machine bolts were used.

The use of steel-frame construction greatly speeds the transformation and development of business areas like Pittsburgh's Gateway Center. And American Bridge has the facilities, the know-how and the skilled personnel to handle any type of steel construction with maximum efficiency and economy.



Western Pennsylvania Headquarters Building, Bell Telephone Company of Pennsylvania, Pittsburgh, Pa.

Designed by Press C. Dowler and William C. Dowler, Architects, Pittsburgh, Pa. and Frank N. Kneas, Engineer, Philadelphia, Pa.

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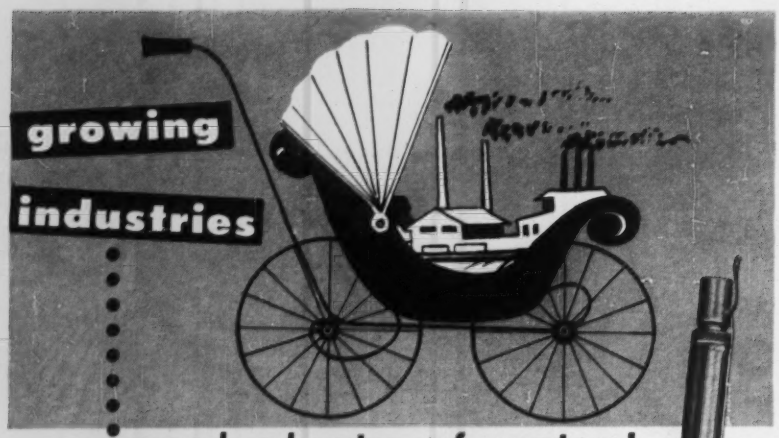

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☐ BUSINESSMAN
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(Continued from page 120)

right of way, constr. paving in DeBeque Canon, Fed. Aid Primary Proj. F 001-1 (16), **$400,000.**

right of way, constr. State Hy. 141, Taylor Ranch-South, Fed. Aid Sec. Proj. A-AA-S-15 (4), **$400,000.**

Mineral Co.—right of way, constr. State Hy. 149, Wagon Wheel Gap-Creede, Fed. Aid Sec. Proj. S 0117 (5), **$190,980.**

Moffat Co.—right of way, constr. surf. State Hy. 317 Hamilton Pagoda, Fed. Aid. Sec. Proj. S 0136 (2), **$100,000.**

right of way, constr., paving State Hy. No. 2, Craig-Maybell, Fed. Aid Primary Proj. F 005-1 (3), **$500,000.**

Montezuma Co.—State Hy. 145, Dolores-East, Fed. Aid Sec. Proj. S 0153 (9), **$200,000.**

right of way, constr. and paving State Hy. No. 10, Cortez-Northwest, Fed. Aid Primary Proj. BF 022-1 (12), **$420,000.**

constr., paving State Hy. 10, Macnos-East and West, Fed. Aid Primary Proj. F 022-1 (13), **$500,000.**

constr., paving State Hy. 106, Cortez south, Fed. Aid Primary Proj. F 023-1 (5), **$500,000.**

Montrose Co.—right of way, constr. paving State Hy. 6, Montrose-East, Fed. Aid Primary Proj. F 021-1 (8) **$500,000.**

Morgan Co.—right of way, constr. State Hy. No. 2 Fort Morgan, Fed. Aid Primary Interstate Proj. I 093-1 (1) **$3,000,000.**

constr. State Hy. No. 2, Fort Morgan-Brush, Fed. Aid Promary Proj. C 15-002-18, **$500,000.**

Otero Co.—right of way, constr. State Hy. 266, Rocky Ford-Cheraw, Fed. Aid Sec. Proj. S 0172 (2) **$200,000.**

Park and Jefferson Counties—paving State Hy. No. 8, Conifer-Southwent, Fed. Aid Primary Proj. F 016-1 (6) **$350,000.**

Park Co.—right of way, constr. State Hy. 8, Deer Creek and Bailey, Fed. Aid Primary Proj. BF 016-1 (7), **$600,000.**

Prowers Co.—constr. State Hy. 196, Bristol-West, Fed. Aid Sec. Proj. S 0006 (6) **$250,000.**

Pueblo and Las Animas Counties—stab. paving State Hy. No. 10 between Walsenburg and La Junta, Fed. Aid Sec. Proj. C 02-0010-01 **$300,000.**

Pueblo Co.—constr. State Hy. 76, between Buelah and Lake Isabel, Fed. Aid Sec. Proj. C 02-0076-06, **$100,000.**

right of way, constr. State Hy. 76 between Pueblo and Beulah, Fed. Aid Sec. Proj. S 0037 (4) **$250,000.**

right of way, constr. paving State Hy. No. 1, Fed. Aid Primary Interstate Proj. I 092-3 (4) **$3,300,000.**

Rio Blanco Co.—right of way, constr., paving State Hy. No. 13, Meeker-Norts, Fed. Aid Primary Proj. F 018-1 (11) **$750,000.**

San Miguel Co.—right of way, constr. paving State Hy. 62, Placerville-East and West, Fed. Aid Primary Proj. BF 020-1 (6) **$275,000.**

constr. surf. State Hy. 145, between Matterhorn and Ophir, Fed. Aid Sec. Proj. S 0153 (10) **$400,000.**

Summit Co.—grading, structures State Hy. 9, Grand Co. Line South, Dillon, Fed. Aid Sec. Proj. S 0107 (8) **$200,000.**

Washington Co.—constr. State Hy. 71, Last Chance-South, Fed. Aid Sec. Proj. S 0019 (5) **$300,000.**

Weld Co.—constr. State Hy. 185-Lafayette Jct. to Hy. No. 52, Fed. Aid Primary Interstate Proj. I 002-1 (13), **$1,500,000.**

right of way, constr. State Hy. 66, Platteville-West, Fed. Aid Sec. Proj. S 0054 (3), **$250,000.**

right of way, constr. State Hy. 60, Johnstown-East Fed. Aid Sec. Proj. S 0053 (2), **$200,000.**

right of way, constr. State Hy. 392, Barnesville-West, Fed. Aid Sec. Proj. S 0034 (5), **$200,000.**

right of way, constr. State Hy. No. 14 Ault-West, Fed. Aid Sec. proj. S 0024 (14), **$200,000.**

right of way, constr. State Hy. No. 3, Fort Lupton North, Fed. Aid Primary Proj. F 006-1 (16), **$75,000.**

right of way, constr. paving State Hy. 3, Platteville North and South, Fed. Aid Primary Proj. F 006-1 (20), **$1,000,000.**

Yuma Co.—right of way, constr., paving State Hy. 102 Joes-East and West, Fed. Aid Primary Project I 013-1 (4), **$500,000.**

constr. State Hy. 59, Yuma-North, Fed. Aid Sec. Proj. C 19-0059-07, **$100,000.**

constr., paving State Hy. 102, Kansas Line and Idalia, Fed. Aid Primary Proj. F 013-1 (3), **$646,000.**

Mark U. Watrous, state hy. engr.

LATIN AMERICA

▲ **Mexico, Mexico City**—HOTEL—Atenor Patino, La Paza, plans luxury hotel. **$5,000,000.**

▲ **Mexico, Monterrey**—FACTORY—Lee Hollingsworth-Gustavo P. Serrano, Gante, 15 Mexico City, plans electrodes factory. **$5,200,000.**

▲ **Mexico, Villa Santiago**—Srela. de Recursos Hidraulicos, Mexico City, plans irrigation dam. **$2,400,000-$3,200,000.**

AMERICANS ABROAD

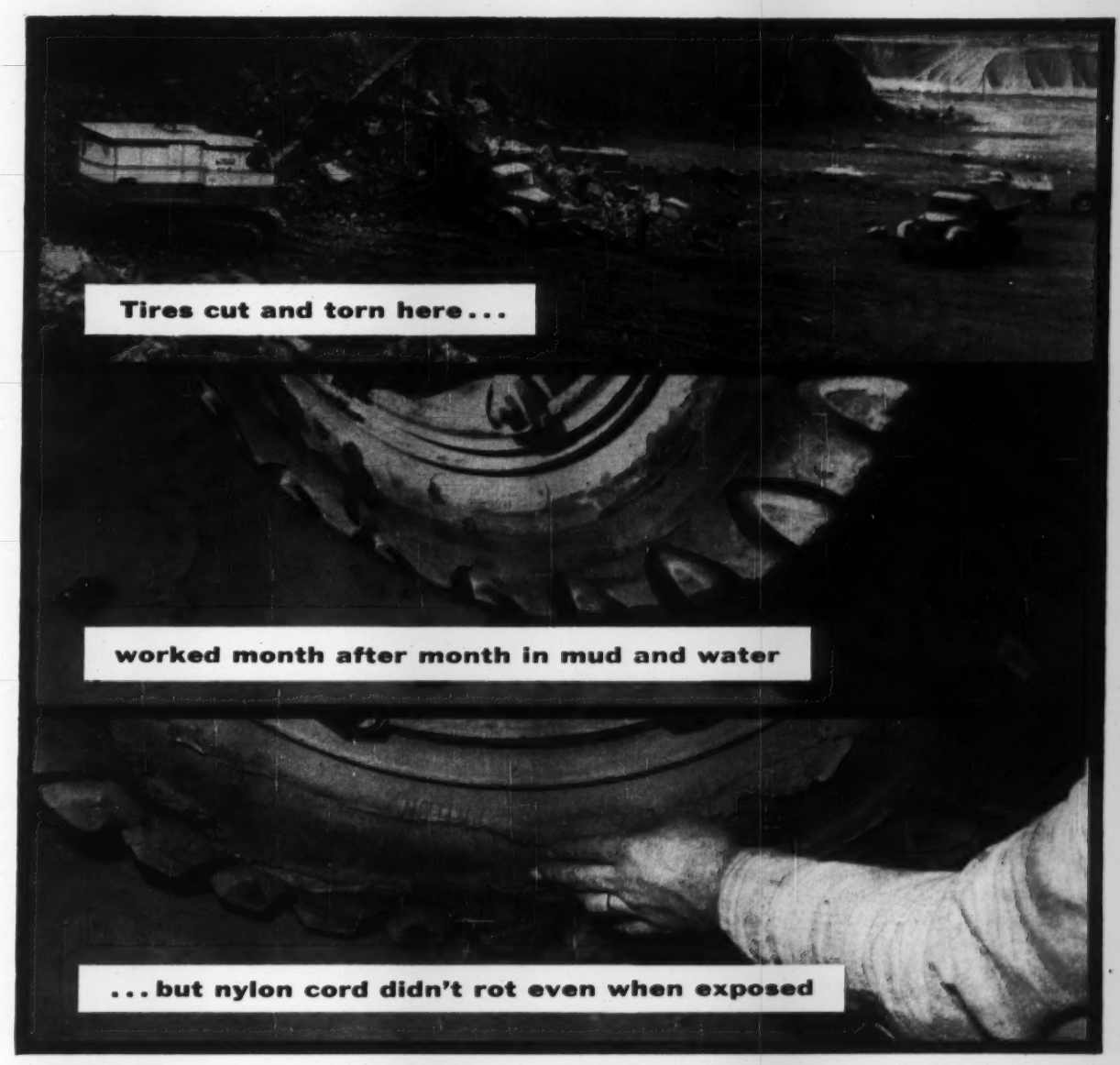
▲ **Australia, Ballarat**—PLANT—Timken Roller Bearing Co., 1835 Dueber St. S.W., Canton, O., U. S. A., plans by Buchan, Baird & Buchan, Melbourne, Australia, 30,000 sq. ft. roller bearings mfg. plant. **$1,500,000.**

PUBLIC BUILDINGS

▲ **Ala., Andalusia**—HOUSING—Housing Authority of Andalusia, 120 low rent housing units. **$1,000,000.**

▲ **Calif., San Jose**—ADMINISTRATION—Bd. Supervs., Santa Clara Co., Courthouse, plans by Kurt Gross, 390 Park Ave., and Alan Walter & Assoc., 45 East William St., 4 story, 62,000 sq. ft. administration bldg. at city civic center. **$1,483,000.**

(Continued on page 124)



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"Sharp traprock, along with mud and water, makes a quarry the roughest place a tire can work. The tires on our trucks are repeatedly cut and abraded right through to the cord body—an easy target for rot with ordinary tires, which have to be removed from service as soon as this happens. But this is no problem with our rot-resistant nylon cords; we avoid downtime by leaving our nylons in operation until we reach a slack period. You can see why our tire costs are way down—only nylon cords can take our kind of day-in, day-out punishment and stay working."

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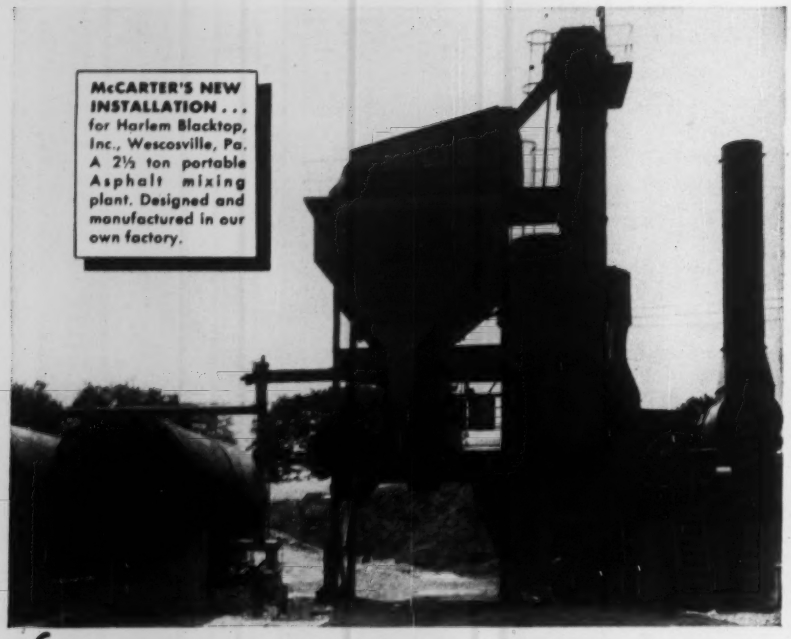
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(Continued from page 122)

▲ **Calif., San Rafael**—CIVIC CENTER—City of San Rafael Bd. Supervs. Marin Co., Court House, plans by Frank Lloyd Wright, c/o Aaron G. Green, 319 Grant Ave., San Francisco, new civic center, 140 acre site north of here. **$8,000,000.**

▲ **Conn., Bloomfield**—SCHOOL—Town, Town Hall, plans by Russell & Gibson & Assocs., 1005 Farmington Ave., West Hartford, Junior High School. **$1,000,000.** A. John Macchi, 57 Farmington Ave., Hartford, and Marchant & Minges, 1097 Farmington Ave., West Hartford, consult. engrs. CD 5/16.

▲ **Conn., Bridgeport**—SCHOOL—Town, Town Hall, plans by Tory Vece, 9 Roger Williams Rd., West End Elementary School, St. Stephens Rd. **$1,200,000.** John M. Dearborn, city plan. engr. CD 5/16/56.

▲ **Ill., Oak Forest**—HOME FOR POOR AND AGED—Cook Co., constr. Oak Forest Institution addn. **$9,580,000.** Bond issue approved.

▲ **Mass., Wilbraham**—SCHOOL—Towns of Hampden and Wilbraham, c/o chairman Regional Dist., Bldg. Comn., 196 Main St., plans by Alderman & Macneish, 594 Riverdale St., West Springfield, Regional High School, **$2,000,000.** Bids in late fall.

▲ **Mich., Lansing**—SCHOOL—City, Bd. Educ., Dwight H. Rich., supt. Schools, plans by O. J. Munson Assocs., 1110 South Pennsylvania Ave., constr. South Lansing High School. **$4,000,000.** CD 6/27/55.

▲ **Minn., Bemidji**—PHYSICAL EDUCATION, etc.—State College Bd., 41 Sherburne Ave., St. Paul, physical education and industrial arts bldg., State College. **$1,000,000.** Constr. this year or next.

▲ **Minn., Mankato**—LABORATORY SCHOOL, etc.—State College Bd., 41 Sherburne Ave., St. Paul, laboratory school bldg., **$1,200,000;** completion of physical education bldg. **$455,000.** To go ahead this or next year.

▲ **Minn., Mankato**—SCIENCE AND ARTS—State College Bd., 41 Sherburne Ave., St. Paul, science and arts bldg. expansion, **$1,200,000.** $1,337,000 appropriated. Constr. 1958.

▲ **Minn., Moorhead**—FIELD HOUSE, etc.—State College Bd., 41 Sherburne Ave., St. Paul, field house, auditorium-stadium and physical educ. bldg. **$1,200,000;** library bldg. **$750,000;** heating plant with equip. $550,000. Funds appropriated. Constr. 1958.

▲ **Minn., St. Cloud**—SCIENCE, etc.—State College Bd., 41 Sherburne Ave., St. Paul, Science and Mathematics Bldg. **$1,150,000.** To go ahead next year.

▲ **Minn., Waseca**—SCHOOLS—Bd. Educ., E. C. King, clk., defeated **$1,950,000** bonds June 27, 2 elementary schools and high school addn. E. C. Corwin & Assocs., E. 818 1st National Bank Bldg., St. Paul, archts. CD 6/20.

▲† **N. J., Fort Monmouth**—HOUSING—U. S. Eng., 111 E. 16 St., New York 3, N. Y., plans by S. J. Kessler, 551 Fifth Ave., New York 1, N. Y., third section; 146 unit Capehart housing **$1,000,000-$3,000,000.**

▲ **O., Painesville**—POWER PLANT BOILER—City, City Hall, installing new boiler at municipal power plant. **$1,375,000.** H. Ralph Hadlow, Hippodrome Bldg. Annex, Cleveland 15, O., consult. engr. Bids in early fall. CD 5/29/52.

▲ **O., Van Wert**—SCHOOL—Van Wert Bd. Educ., bond election Nov. 5, high school. **$1,700,000.** Joseph Baker & Assoc., Newark, Archt.

▲ **Pa., Huntingdon**—SCHOOL—Huntingdon Joint School Bd., Huntingdon, plans by Hunter, Campbell & Rea, 5 Ave. and 36 St., Altoona, Junior High School. **$3,000,000.**

▲ **Tenn., Chattanooga**—TREATMENT CENTER—State Building Comm., Nashville, constr. 200 bed intensive treatment center for mental patients, **$3,000,000.**

▲ **Wis., Madison**—SCHOOL—University of Wisconsin, plans by R. C. Kirchhoff, Madison, medical school bldg., **$2,000,000.**

▲ Wis., Milwaukee—SCHOOL—School Bd., 1111 N. 10 St., plans by F. Wegner, Junior-Senior High School, W. Marion St. **$5,000,000.** CD 4/17.

▲ **N. S., Sydney**—ACADEMY—City, City Hall, plans by Downie, Baker & Ahern, 333 Charlotte St., academy, **$1,250,000.** CD 5/25/55.

COMMERCIAL BUILDINGS

▲ **Calif., San Francisco**—HOSPITAL—Bd. Trustees French Hospital, Geary and 5th Ave., 200 bed hospital to replace present facility. **$2,500,000.**

▲ **Conn., Hartford**—HOTEL, MOTOR INN—John Colton et al, Shore Rd., South Lyme, hotel-motor inn, Airport Rd., South Meadows. **$1,500,000.**

▲ **Conn., Ridgefield** — HOUSES — Attorney Mac R. Lepofsky, Trustee, 10 Isaac St., Norwalk, 141 houses, Danbury-Ridgefield Rd. **$1,410,000.**

▲ **Conn., Stratford**—HOUSES—Daniel L. Del Vecchio, 4191 Main St., Bridgeport, 114 houses, Second Hill Lane. **$1,140,000.**

▲ **Ill., Franklin Park**—HOSPITAL—Leyden Community Hospital Foundation, 9711 Grand Ave., plans by K. M. Vitzthum & Co., 1 N. LaSalle St., Chicago, 200 bed hospital, Leyden Twp. **$4,000,000.** Site not selected.

▲ **Iowa, Marshalltown**—HOSPITAL—Mercy Hospital, plans by L. A. Daly Co., Insurance Bldg., Omaha, Neb., hospital addn. **$1,250,000.** CD 5/24.

▲ **Mich., Midland**—SHOPPING CENTER—George Rapanos, c/o Alden B. Dow, archt., 315 Post St., shopping center. **$6,580,000.**

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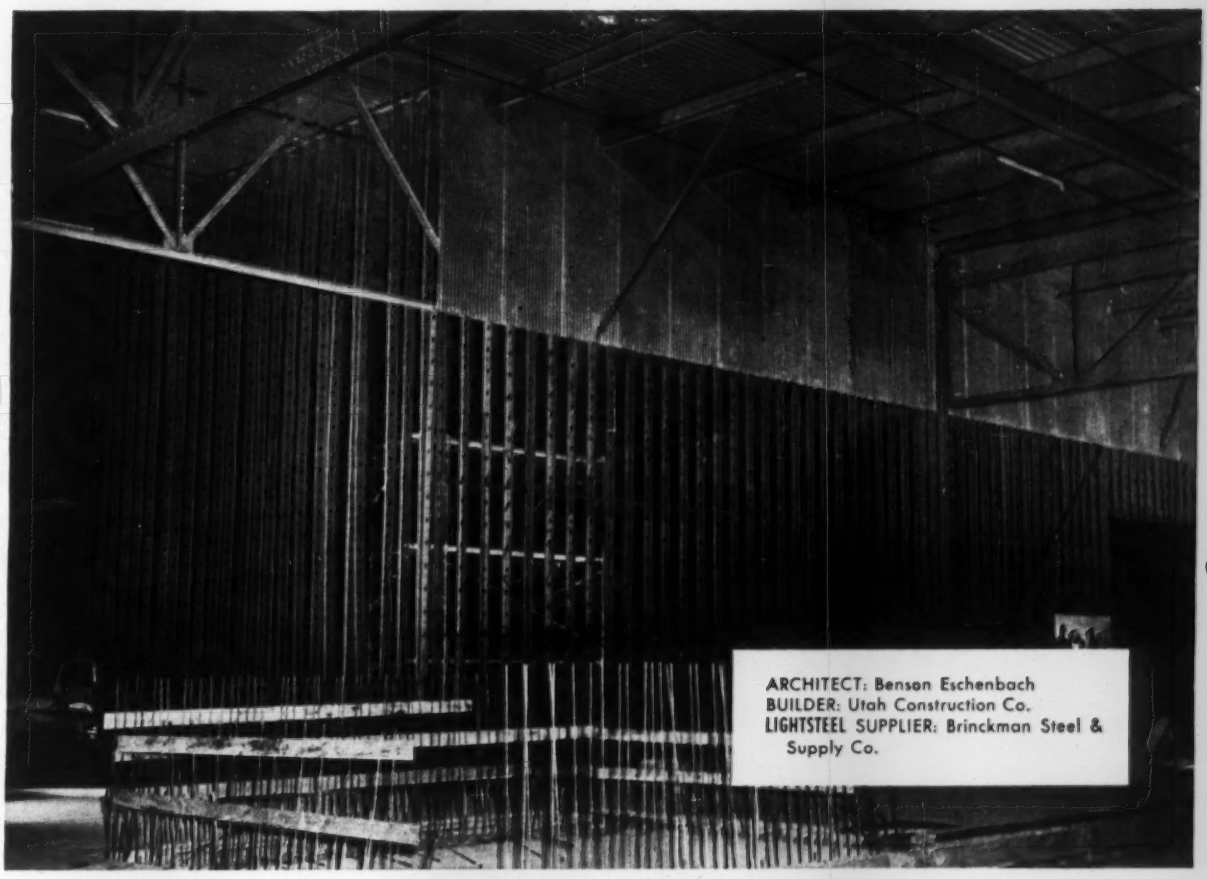

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The huge plant is a fine example of one of many types of structures where Penmetal LIGHTSTEEL is employed to advantage. Other high-bay applications include: warehouses, school gymnasiums and aircraft hangars.

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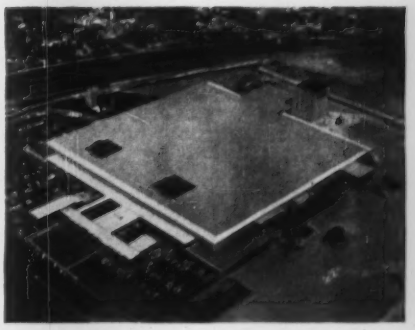

The new plant of Diamond Walnut Growers, Inc., is designed to process more than 70 per cent of the nation's walnut crop.

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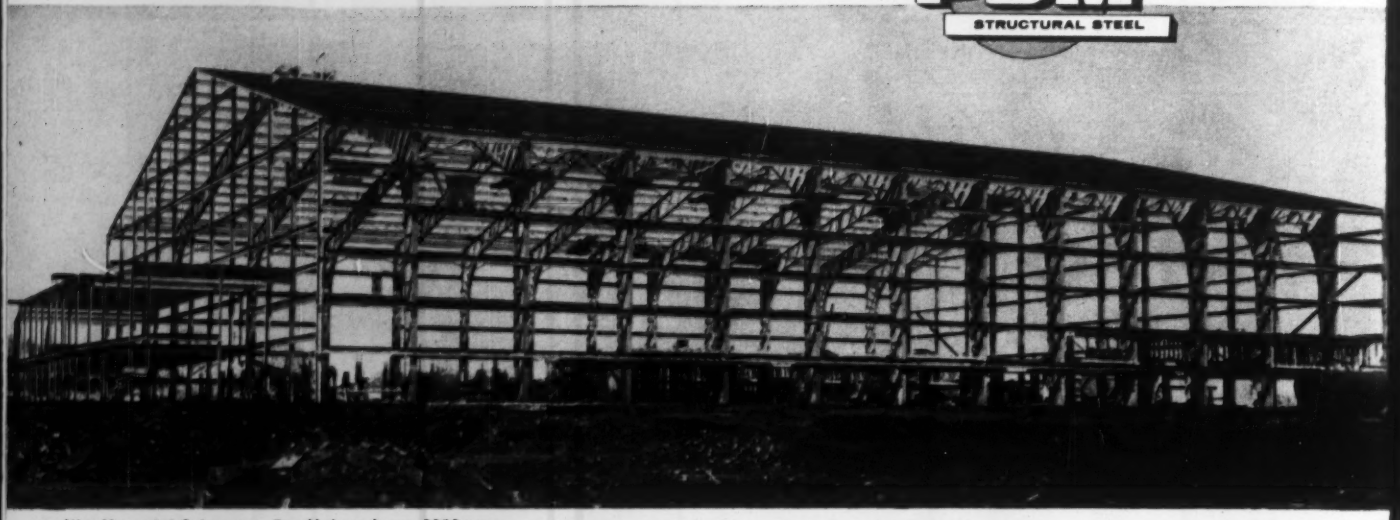
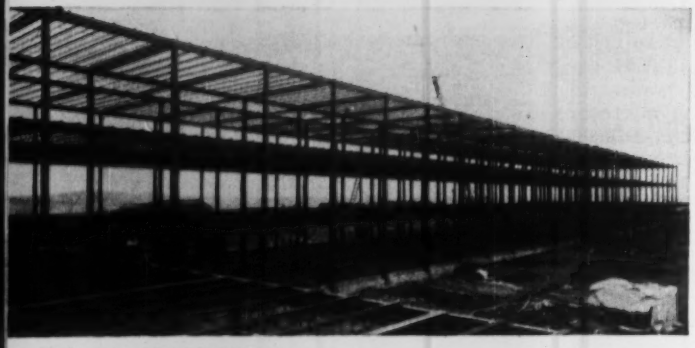
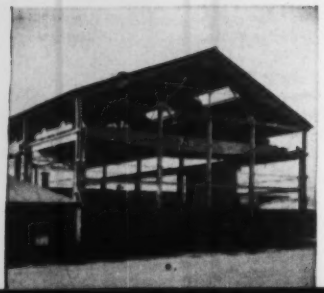


War Memorial Colosseum, Des Moines, Iowa. 2200 tons.



Penn Township High School,
Allegheny County, Pa.



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DALLAS (1)..1219 Praetorian Bldg.
SEATTLE (1).....522 Wall Street
SANTA CLARA, CAL., 621 Alviso Road
DENVER (2).....909 17th Street

(Continued from page 124)

▲ **Mich., Royal Oak**—HOSPITAL—Beaumont Hospital, 3601 West 13 Mile Rd., hospital, incl. 2 story top addn. and new wing, facilities for Cobalt Therapy Treatment, $1,500,000-$2,000,000.

▲ **N. Y., Buffalo**—OFFICE—Tishman Realty Constr. Co., 460 Park Ave., New York 22, plans by Emery Roth & Sons, 575 Madison Ave., New York, Zone 22, 20 story air conditioned office bldg., Main St. north east corner Broadway. $3,000,000. To go ahead Summer, 1957.

▲ **N. Y., New York**—DEPARTMENT STORE—Samuel Bialkin, 60 Plaza St., Brooklyn, Zone 17, plans by Richard Roth, 575 Madison Ave., Zone 22, 3 story dpt. store, 147-51 E. 44 St., and 140-48 E. 45 St. $1,000,000.

▲ **N. Y., New York**—RESEARCH LABORATORY, etc.—Muscular Dystrophy Assocs., 1790 Broadway, New York 19, plans by Skidmore, Owings & Merrill, 575 Madison Ave., Zone 22, 11 story, penthouse research laboratory and office bldg., 511-15 East 71 St. $3,500,000. CD 8/6.

▲ **O., Canton**—HOMES—Frank C. Haffner, 1101 30 St. N.E., 140 homes Martindale-Brexley-Haffner allotment. $4,000,000.

▲ **Tenn., Nashville**—APARTMENTS, etc.—George Peabody College for Teachers, 21 Ave. S., plans by Francis B. Warfield & Assocs., Nashville Trust Bldg., four 2 story apartments for married students and a student center. $1,200,000. CD 6/26.

▲ **Tex., Dallas**—SHOPPING CENTER—Trammell Crow, 425 S. Field St., shopping center, Preston Rd. and Royal Lane. $2,000,000; hard paved auto parking center and area paving for shopping center. $85,000.

▲ **Tex., Houston**—OFFICE—Atlas Powder Co., 3272 Westheimer St., office (to incl. research laboratories). $1,500,000.

▲ **Tex., Houston**—CHURCH—First Baptist Church, 810 W. 24 St., church plant. $3,000,000. Site changed. Wirtz, Calhoun, Tungate & Jackson, 2506 Richton St., owners staff engrs. CD 5/8, under Tex., Lubbock.

▲ **Tex., Temple**—HOSPITAL, etc.—Scott & White, Memorial Hospital, c/o Dr. P. M. Bassel, pres. Bd. Trustees, Hy. 36, Temple, plans by Hedrick & Stanley, archts.-consult. engrs., 1200 T&P Bldg., Fort Worth, prime hospital bldg., SE edge of city, $6,500,000; nurses home $750,000; power plant $275,000; laboratory $250,000; storage $150,000; doctors bldg. $500,000; laundry plant $190,000; site grounds work, landscaping $175,000; sanitary sewerage sys. $150,000; water sys. $100,000; natural gas distr. sys. $90,000; permanent type paving $170,000; grounds area lighting sys. $90,000; drainage $85,000. CD 7/1/52.

▲ **Wash., Seattle**—TELEVISION STUDIO, etc.—KTWV, 230 8 Ave. N., plans by T. Bellamy, 315 Marion St., 16 story bldg. to house television studio and apartments, topped by 350 ft. television tower. $1,000,000.

▲ **Wis., Milwaukee**—HOTEL-MOTEL—Kaiser Bros., c/o A. M. Hurwitz, 7025 N. Barnett Ave., plans by Grassold, Johnson & Assocs., 734 N. Jefferson St., Zone 2, hotel-motel with parking facilities. $3,000,000.

INDUSTRIAL BUILDINGS

▲ **Conn., Killingly**—PLANT—Knox Glass, Inc., 1944 Penn Ave., Knox, Pa., plant for manufacture of glass, $1,200,000. Constr. to start within a month.

▲ **Mich., Trenton**—SINTERING PLANT, etc.—McLouth Steel Corp., M. A. Cudlip, pres., sintering plant, ore storage facilities, ore bridge addn., blast furnace, oxygen steel producing equip., and auxiliary equip. $35,000,000.

▲ **N. Y., Port Jefferson**—GENERATING UNIT—Long Island Lighting Co., 250 Old Country Rd., Mineola, Generating Unit No. 4, near existing units. $23,000,000. To go ahead in 1961.

▲ **Tex., Houston**—PLANT—Southern Pacific Ry. Co., L. A. Loggins, ch. engr., 913 Franklin St., crosstie-treatment plant, on 35 acre tract, at 4910 Liberty St. $1,000,000. Work by August. CD 11/27/51.

▲ **Ont., St. Mary's**—BOX FACTORY—Hinde & Dauch Paper Co. of Canada Ltd., 43 Hanna Rd., Toronto, 1 story, 120,000 sq. ft. steel frame, masonry wall box factory, $1,500,000.

▲ **Sask., Saskatoon**—DISTILLERY—Signet Distilleries Ltd., 1167 N.W. 2 St., Moose Jaw, distillery, $2,300,000. Site changed. CD 7/11/56, under Sask., Moose Jaw.

UNCLASSIFIED

▲ **N. J., West New York**—MARINE TERMINAL—Rose & Moscowitz, Union Central Bldg., Cincinnati, O., constr. marine terminal, foot of 60th St. $3,000,000.

▲† **New York**—HEADQUARTERS—U. S. Eng., 111 E. 16 St., New York, Zone 3, plans by James P. O'Donnell, 39 Broadway, New York, Zone 6, brigade headquarters, AAA facilities, New York Area, $1,000,000-$3,000,000.

▲ **O., Cleveland**—ZOO IMPRVS.—City, City Hall, Zone 14, bond election Nov. 5, Cleveland Zoo imprvs. $1,000,000. CD 11/5/54.

▲ **Tex., Houston** — PUSHBUTTON YARDS — Southern Pacific Ry. Co., 913 Franklin St., 16-28 track push-button yards for north side (for making up trains and terminal transfers), $1,250,000. W. M. Jaekle, 65 Market St., San Francisco, Calif., ch. engr.

▲ **Wash., Pasco**—COLISEUM—Columbia Coliseum Corp., c/o L. C. Grey, Pasco, 200x300 ft. coliseum. $1,000,000.

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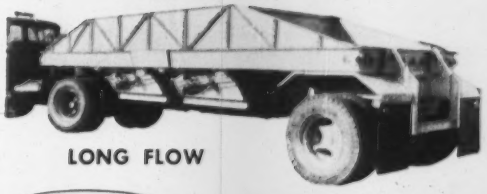

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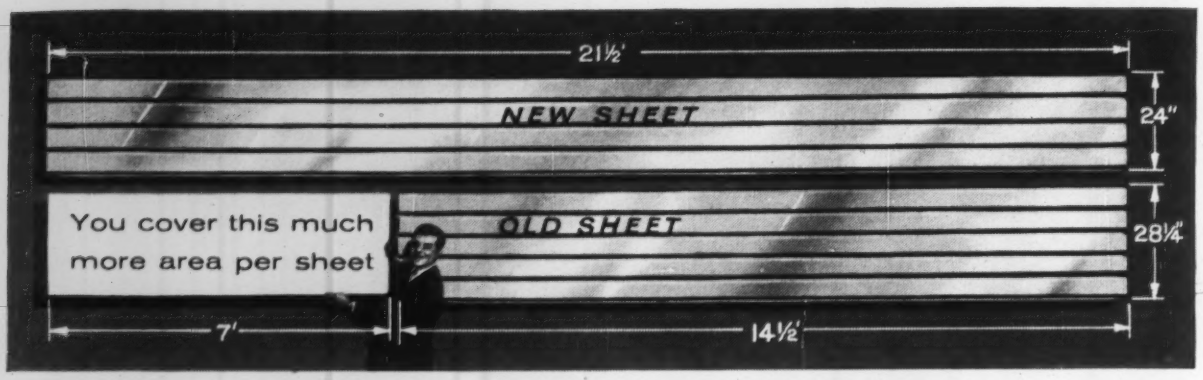

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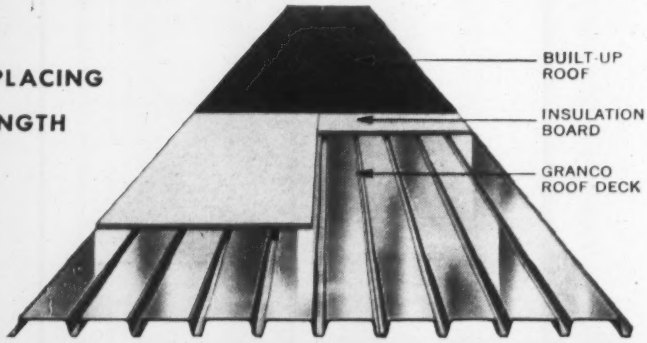

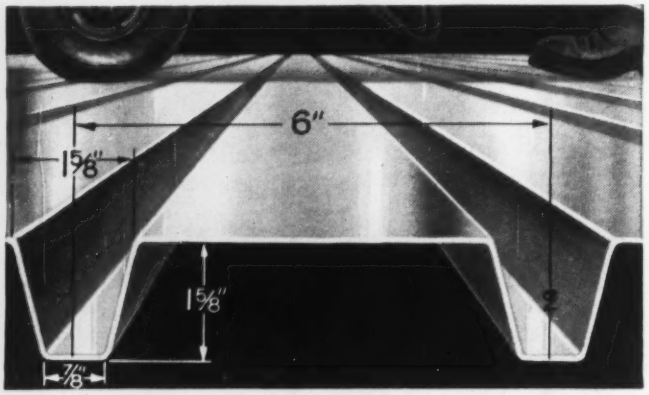

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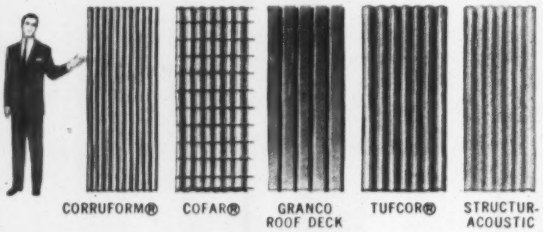

Bids—Low Bids—Contracts—Second Edition

NEW ENGLAND

HEAVY CONSTRUCTION—LB & CA

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

J. F. White Contr. Co. & Consolidated Constr. Co., P. O. Box 202, Westwood, Mass., CA **$2,691,540,** est. $2,649,513, relocating Rte. 28, FA, Proj. 1-350 (6), in Reading-Woburn and Stoneham. Bids June 4. CD 6/7, under LB.

▲ **R. Zoppo Co.,** 842 Providence Hy., Norwood, Mass., CA **$1,510,435,** interceptor sewers, pumping station and sewage treatment plant, Hollyhock Island, NORWICH, CONN. City, City Hall, Norwich, Conn. Bids June 6. CD 6/13, under LB.

BUILDINGS—LB & CA

▲ **Park Constr. Co., Inc.,** 40 Court St., Boston, Mass., CA **$1,252,000.** DORMITORY BLDG., State Teachers College, FITCHBURG, MASS. Commonwealth of Mass., Dpt. Educ., c/o Div. Bldg. Constr., 38 Chauncy St., Boston, Mass. Bids June 6. CD 6/11, under LB.

▲ **G. L. Rugo & Sons, Inc.,** 80 Boylston St., Boston, Mass., CA **$1,270,000,** est. $1,250,000, HOSPITAL addn., alterations, East St., METHUEN, MASS. Bon Secours Hospital, Chancery Office, 1 Lake St., Brighton, Mass. Curtin & Riley, 45 Newbury St., Boston, Mass., archts. CD 7/1, under LB.

▲ **H. Wales Lines Co.,** 134 State St., Meriden, Conn., CA **$2,400,000.** 6 story HOSPITAL addn., Locust Ave., DANBURY, CONN. Danbury Hospital, Locust Ave., Danbury, Conn. CD 4/23/56.

▲ **Southern New England Contg. Co., Inc.,** 66 Stanford St., Hartford, Conn., CA **$1,209,000.** HOSPITAL addn., HARTFORD, CONN., Mount Sinai Hospital, 500 Blue Hills Ave., Hartford, Conn. Bids June 18. CD 6/24, under LB.

▲ **Ridgefield Lakes,** Route 7, Ridgefield, Conn. Owner Builds. **$1,267,500,** 150 HOUSES, "Ridgefield Lakes", Rte. 7, RIDGEFIELD, CONN.

▲ **U & R Constr. Co.,** R.F.D. No. 1, Wapping, Conn., CA **$1,687,800,** 120 HOUSES, "Avery Heights", Avery St., SOUTH WINDSOR, CONN. Morton Miller, Avery St., South Windsor, Conn. Awarded 6/28. CD 9/7.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
July 26 Pennsylvania — August 8 New York
STREETS AND ROADS
July 23 New Jersey — July 26 Pennsylvania
August 8 New York

BUILDINGS—BA

▲ **N. Y., New York**—RESEARCH LABORATORY—BA 7/22—Muscular Dystrophy Assocs., 1790 Broadway, Zone 19, 11 story, penthouse research laboratory and office bldg., 511-15 East 71 St. $3,900,000. Skidmore, Owings & Merrill, 575 Madison Ave., Zone 22, archts. CD 7/3.

▲ **N. Y., Greenburgh**—LABORATORY—BA 8/1—Union Carbide & Carbon Corp., 30 E. 42 St., New York, Zone 17 (selected list of bidders) research laboratory, service laboratory, utilities bldg., cafeteria. $2,000,000. Skidmore, Owings & Merrill, 575 Madison Ave., New York 22, N. Y., archts. CD 8/8/56.

▲ **D. C., Wash.**—HOSPITAL—BA 8/5—Columbia Hospital for Women, 25th and L Sts. N.W., constr. 5 story addn. to present hospital. Approx. $2,000,000. Plans deposit $75. Irwin S. Porter & Sons, Metropolitan Bank Bldg., archts. CD 10/11, under LB.

HEAVY CONSTRUCTION—LB & CA

▲† **Arundel Corp.,** foot of Fulton St., Brooklyn, N. Y., LB **$2,486,272** (2 bidders) dredging to depth of 37 ft. below mean low water involving removal of approx. 467,800 cu. yd. place measurement, all material incl. ledge rock from New York and New Jersey Channels, Section 4, Rock Area B, Richmond Co., New York and Union Co., New Jersey, CIVENG-30-075-57-89, NEW YORK and NEW JERSEY. U. S. Eng., 111 E. 16 St., New York, Zone 3, N. Y. Bids about July 10. CD 6/12.

▲ **General Railway Signal Co.,** 23 Park Ave., New York 17, N. Y. CA **$4,498,750.** furnishing, installing block signaling and interlocking equip. for Dekalb Ave. imprv., BMT Division, Equipment Contr. S-88, BROOKLYN, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. Bids May 17. CD 5/23, under LB.

Cranford Co., Inc., 52 Ninth St., Brooklyn 15, N. Y. CA **$955,562.** Contr. 1059C, lateral sewers at Lido Beach and vicinity, Town of Hempstead, Lido Beach Sewage Collection District, MINEOLA, N. Y. Nassau Co. Executive, Nassau Co., Old County Court House, Mineola, N. Y. Bids June 18. CD 6/20, under LB.

▲ **Andrew Catapano & Co.,** 88-43 76 Ave., Glendale, N. Y. and **Grow Constr. Co.,** 313 W. 53 St., New York 19, N. Y. (joint venture) CA **$10,346,260.** Base Bid, same alt. A, Contr. No. 1, Morgan Intercepting Sewer, Metropolitan Ave., Scott Ave., Randolph St., Varick Ave, Johnson Ave., Knickerbocker Ave., Morgan Ave., Lombardy St., Monitor St., Monsignor McGoldrick Park and Russell St. for Newtown Creek Pollution Control Proj., Brooklyn and Queens Boros, NEW YORK, Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids Feb. 21. CD 2/27, under LB.

▲ **T&T Contg. Corp.,** 4814 Glenwood Rd., Brooklyn, N. Y. CA **$1,549,520.** storm water sewer appurtenances in Springfield Blvd., sanitary sewer appurtenances in Springfield Blvd., reconst. sanitary sewer, appurtenances in Springfield Blvd., grading, curbing, sidewalks, b. conc. paving in Springfield Blvd., 4th Ward, NEW YORK. President Queens Boro, Queens Borough Hall, 120-55 Queens Blvd., Kew Gardens 24, N. Y. Bids May 29, awarded June 12. CD 6/4, under LB.

▲ **Slattery Contg. Co. and Tully & DiNapoli, Inc.,** 46-36 54 Rd., Maspeth 18, N. Y. CA **$4,417,807** platform exten. to Times Square, 72 and 96 Sts., Stations and enclosures for Broadway-7th Ave. line, Manhattan Boro, Contr. C-120, NEW YORK, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. Bids June 14. CD 6/25, under LB.

▲ **Christopher Constr. Co.,** 546 N. 4th St., Columbus, O., CA **$1,582,930,** est. $1,724,282, sewage treatment plant, Piney Fork Rd., Contr. 9, BETHEL, PA. Bethel Boro Municipal Auth., Bethel, Pa. Chester Engineers, 601 Swismon St., Pittsburgh 12, Pa., engrs. CD 4/11.

▲ **Dpt. Procurement,** City Hall Annex, Phila., Pa., received no bids June 26, Bid C-110, build and operate aquarium in Fairmount Park and other related activities, PHILA., PA. Est. **$2,500,000.** CD 5/20.

BUILDINGS—LB & CA

▲ **Mandel Bros. Contg. Corp. & Francis E. Freeman, Inc.,** 307 Fifth Ave., New York 16, N. Y. CA **$1,097,000.** house LAUNDRY and bath facilities and SHOE and TAILOR SHOPS, Elmira Reformatory, ELMIRA, N. Y. Bureau Contr. & Accounts, Albany, N. Y. Bids June 27. CD 7/3, under LB.

Double M. Constr. Corp., Central Park Rd., Plainview, N. Y. CA **$945,000.** three 3 story, 100 unit HOUSING, East Merrick Rd. between Buffalo and Albany Aves., FREEPORT, N. Y. Bids June 11. CD 6/14, under LB.

▲ **Cuzzi Bros. & Singer, Inc.,** 10 52nd Ave., Mount Vernon, N. Y. CA Est. **$1,500,000.** RECREATION HALL and CHAPEL at Mother Cabrini High School, NEW YORK, N. Y. Archdiocesan Bldg. Comn., 451 Madison Ave., New York 22, N. Y. Bids 6/6. CD 5/29.

▲ **Diesel Constr. Co.,** 625 Madison Ave., New York 22, N. Y. CA Est. **$1,000,000,** 3 story dpt. store, 147-151 E. 44 St., and 140-148 E. 45 St., NEW YORK, N. Y. Samuel Bialkin, 60 Plaza St., Brooklyn 17, N. Y. E. J. Korvett, Inc., lessee. CD 7/8.

▲ **Pine Ridge Homes,** c/o Seymour Orlofsky, 199 Main St., White Plains, N. Y., Owner Builds. **$3,000,000,** 100 HOUSES, on tract at Lincoln Ave., RYE, N. Y.

▲ **Birchwood at Westbury Homes,** c/o Stanley H. Klein, archt., 89-31 161 St., Jamaica, N. Y., Owner Builds. **$1,300,000,** 58 HOUSES on tract at Westbury and Old Country Rds., WESTBURY, N. Y.

▲ **Hamilton Builders,** RD No. 1, Somerville, N. J. CA Est. **$1,000,000.** RESIDENTIAL DEVELOPMENT, Rte. 206 and Hamilton Rd., SOMERVILLE, N. J. Hamilton Builders & Constr. Co., RD No. 1, Somerville, N. J. William D. Chirgotis, 968 Stuyvesant Ave., Union, N. J., archt.

▲ **Victor Mielioski,** 2 South Main St., Manville, N. J. Owner Builds. **$1,100,000.** 50 HOUSES, U. S. Hy. 22 and Country Club Rd. in Greendale Sec., 2nd section of development, Bridgewater Twp., SOMERVILLE, N. J. Herman F. Kuzel, 232 Walnut St., Dunellen, N. J., archt.

Rand Constr. Co., 114 E. 32nd St., New York, N. Y., CA **$988,500** (39 bidders) general contract SCHOOL, on 17 acre beam tract, Conklintown Rd., WANAQUE, N. J. Lakeland Regional High School Dist., Wanaque, N. J. Bids June 27. CD 6/6.

Trimble Co., 1719 Pennsylvania Ave., Pittsburgh, Pa. CA **$915,000.** 3 story, brick, block HOSPITAL addn., alterations, BRADDOCK, PA. Braddock General Hospital, 412 Holland Ave., Braddock, Pa. CD 7/9/56.

▲ **Hyman Korman, Inc.,** 6401 Castor Ave., Phila., Pa. Separate Contracts. **$1,000,000.** RESIDENTIAL DEVELOPMENT, Buck Rd., HUNTINGDON VALLEY, PA.

▲ **Funk Building Corp.,** 754 S. Millvale St., Pittsburgh, Pa. CA Est. **$1,000,000,** 1 story, 180x200 ft. steel, brick and block SHOPPING CENTER, Rte. 30, near IRWIN, PA. Soffer Realty Co., 2100 Fifth Ave., McKeesport, Pa. CD 5/25/56.

George K. Heebner, 1231 Vine St., Phila., Pa., CA **$900,000,** 1 and 2 story, brick, block, steel, concrete MANUFACTURING PLANT and OFFICE, KING OF PRUSSIA, PA. Windemann Machine Co., 4272 Wissohickon Ave., Phila., Pa. Rosengarten & Kraemer, 10 S. 18th St., Phila., Pa., archts-engrs.

▲ **Mellon Stuart Co.,** 210 E. Parkway, Pittsburgh, Pa. CA Est. **$1,000,000.** 1 story, brick, block BOTTLING PLANT, Stowe Twp., McKEES ROCK, PA. Pepsi Cola Co., 3 W 57 St., New York, N. Y. Skidmore, Owings & Merrill, 425 Park Ave., New York, N. Y., archts.

▲ **Charles Simon,** 6709 Castor Ave., Phila., Pa. Separate Contracts. **$1,120,000,** RESIDENTIAL DEVELOPMENT, Artwood Dr., PHILA., PA. Sherwin Rochles, 1325 Walnut St., Phila., Pa., archt.

George K. Heebner, Inc., 1231 Vine St., Phila., Pa., CA **$950,000,** 3 story each, brick, glass, stone and steel 142x54 ft. and 142x342 ft., TV Guide OFFICE BLDG., Southeast and Southwest Wings, RADNOR, PA. Triangle Publications, Inc., 400 N. Broad St., Phila., Pa. Rosengarten & Kraemer, 10 S. 18th St., Phila., Pa., archts.-engrs.

▲ **Navarro Corp.,** 6219 Broad St., Pittsburgh, Pa. CA **$1,133,000,** 5 story, 32x330 ft. steel frame, brick, stone HOSPITAL addn., WILKINSBURG, PA. Columbia Hospital, 312 Penn. Ave., Wilkinsburg, Pa. CD 11/15.

▲ **Joseph B. Bahen Constr. Co.,** 418 Randolph N. W. Wash., D. C. CA Est. $1,000,000, Boys' HIGH SCHOOL to be known as Our Lady of Good Counsel High School, Georgia and Arcola Aves., WHEATON, MD. Xaverian Bros., 10000 New Hampshire Ave., Silver Spring, Md. Bids June 20, awarded June 28. CD 6/4.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
July 26 Kentucky, Virginia
STREETS AND ROADS
July 26 Kentucky, Virginia

BUILDINGS—LB & CA

▲† **S. C., Beaufort**—HOUSING—BA 8/13—Dist. P. Wks. Office, Bldg. No. 13, U. S. Naval Base, Charleston, Capehart Family Housing, U. S. Marine Corps Auxiliary Air Station, NBy (CH)-13909, Spec. No. 13909/57. CD 8/28.

HEAVY CONSTRUCTION—LB & CA

▲ **S. J. Curry & Co.,** Box 1437, Albany, Ga., CA $1,717,000. Div. 11, sewage treatment plant, MACON, GA. Bd. City Comrs., City Hall, Macon, Ga. Bids June 27. CD 6/5.

▲ **FLORIDA**—State Road Dpt., Tallahassee,

George D. Auchter Co., 1193 Jacksonville, Fla. CA $1,419,712. roads and bridges in Duval Co. Bids May 16, awarded July 2. CD 5/23, under LB.

▲ **Blount Bros. Constr. Co.,** Bell Bldg., Montgomery, Ala., LB **$1,453,531,** constr. Transit Shed, concrete platform and electrical ses at Berths 3, 4 and 5 of Marginal Wharf for Dpt. State Docks and Terminals, MOBILE, ALA. Alabama State Docks Dpt., at office Ward McFarland, dir., State Office Bldg., Mobile, Ala. Bids May 28. CD 5/3.

▲ **TENNESSEE**—State Hy. Dpt., L. N. Means, state office engr., Nashville,

Tenn.—J. A. Hadley Constr. Co., Humboldt, Tenn. CA **$170,724.** (3 bidders) wid'n. existing pavement with bit. materials (plant mix) from 24 ft. to 48 ft. of section state Rte. No. 5 beginning at L. & N. Railroad in Humboldt and extending 2.5 mi. north, Proj. No. SP-2000-B, Gibson Co.;

Tenn.—J. B. Michael & Co., Inc. & Warren Bros. Roads Co., 1021 Heywood St., Memphis, Tenn. CA **$1,196,156.** (3 bidders) wid'n., resurf. with bit. materials (plant mix) section of State Rte. No. 1, 29.14 mi. beginning at junction of State Rte. No. 20 northeast of Jackson and extending to State Rte. No. 77, southwest of Huntingdon, Proj. No. SP-2010 A, Madison and Carroll Counties;

Tenn.—Ford Constr. Co., Inc., Dyersburg, Tenn. CA **$724,491.** (3 bidders) wid'n., resurf. with bit. materials (plant mix) section State Rte. No. 78, 20.65 mi. beginning at Rte. No. 79 and extending to Kentucky state line, Proj. No. SP 2012-A, Lake Co. Grand Total $2,091,371. Bids 6/21. CD 6/27, under LB.

BUILDINGS—LB & CA

▲ **H. W. Ivey Constr. Co.,** 3133 Maple Dr. N.W., Atlanta, Ga. LB **$3,069,610.** CHEMISTRY BLDG. and ANIMAL SCIENCE BLDG., ATHENS, GA. University System of Georgia, 244 Washington St. S.W., Atlanta, Ga. Bids June 2. CD 5/24.

▲ **Batson Cook Co.,** West Point, Ga. CA **$3,549,433** relocation of Naval Air Station, NBy 4492, MARIETTA, GA. P. Wks. Officer, Dpt. Navy, Naval Base, S. C.

▲ **A. B. Newton & Co.,** Box 191, Vidalia, Ga. CA **$1,679,000.** Fla. 34-1 and 34-2, low rent HOUSING, PLANT CITY, FLA. Plant City Housing Auth., City Hall, Plant City, Fla. Bids June 25. CD 7/8, under LB.

▲ **Chemical & Industrial Corp.,** 256 McCullough St., Cincinnati, O., CA Est. **$3,000,000,** 150 ton per day nitric acid PLANT near YAZOO CITY, MISS.

▲† **Struck Constr. Co.,** 147 N. Clay St., Louisville, Ky. CA **$1,306,817,** est. $1,230,315 (5 bidders) 2 enlisted men's BARRACKS, ENG-15-029-57-80, FORT KNOX, KY. U. S. Eng., P. O. Box 59, Louisville, Ky. Bids June 11. CD 6/17, under LB.

MIDDLE WEST

BUILDINGS—BA

▲ **O., University Heights**—STUDENT ACTIVITIES—BA 7/31—John Carroll University, University Heights. Student Activities Bldg. No. 1, $1,130,000. Plans deposit $25. Small, Smith, Reeb & Deaz, 1010 Euclid Ave., Cleveland, Zone 15, archts. CD 2/28.

▲ **O., Massillon**—SCHOOL—BA 8/19—Bd. Educ., L. J. Smith, supt., Massillon, Washington High School addn., Lincoln Elementary School and swimming pool. $1,700,000. Extended date. CD 6/27.

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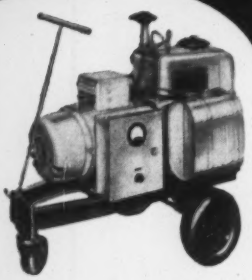

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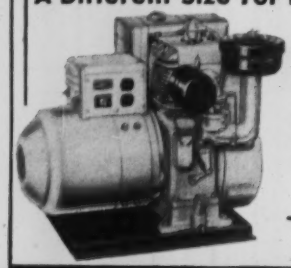

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MAKE NIGHT HOURS PAY with NITE-HAWK

Four 80,000 c.p. flood lights raise to 8½ ft.—aim in all directions. Control panel has duplex receptacles for extension light and power tool lines—voltage regulator—circuit breakers—fused circuits.

Tows at highway speeds on heavy-duty trailer with leaf springs—retractable caster wheel. This is the finest, most flexible unit available. 5 KW, 115 or 230 Volt.

Powered by Wisconsin 4 cylinder, air-cooled engine

WRITE FOR LITERATURE AND PRICES

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Dept. M-57 Newton, Iowa

SAVE MONEY ON WET JOBS

pre-drain faster with HIGH-CAPACITY equipment by

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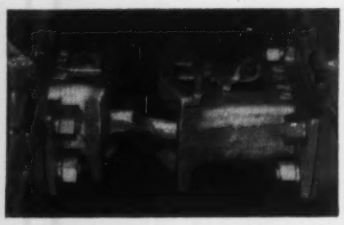

MAYO MINE CAR COUPLER

. . . the coupler with the mating instinct

Mayo's new, cast steel coupler for narrow gauge mine cars coupled instantly on tangent or curves. Safe, self-centering link completely eliminates all hazards of hand coupling. Only a little more expensive than link-and-pin, it more than pays for itself by preventing accidents. Easily installed by bolting to existing cars. Write for Bulletin No. 21.

Steel Forms • Headframes • Muck Bins
Shields • Air Locks • Locomotives
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MAYO

TUNNEL AND MINE EQUIPMENT
LANCASTER, PENNA.

Wis., Elm Grove—SCHOOL—BA 7/31—Dist. Bd. Jt. Com. School Dist. 1, Towns of Brookfield and New Berlin, Elm Grove, Pilgrim Park Junior High School. $905,000. Fritz von Grossmann, 5455 W. Burleigh St., Milwaukee, archt. CD 12/19.

Wis., Sheboygan—SCHOOL—BA 8/6—Bd. Educ., Sheboygan, Wilson Elementary School. $951,000. Plans deposit $25. Extended date. Sater & Senescall, 707 Center Ave., archts. CD 6/27.

▲ Wis., Waukesha—COURT HOUSE—BA 8/23—Waukesha Co., Waukesha, general contract, court house. $2,250,000. Foss & Jansma, 11109 W. Blue Mound Rd., Milwaukee, archts. CD 1/3/55.

▲† Mich., Battle Creek—BUILDINGS—BA 9/17—Veterans Admin., Munitions Bldg., Wash. 25, D. C., addnl. buildings, utilities and alterations, addn. to Bldgs. 5, 30 and 85 for Veterans Admin. Hospital. $1,500,000-$2,000,000. Harley, Ellington & Day, Inc., 153 E. Elizabeth St., Detroit, Zone 1, archt. and engr. CD 6/24.

HEAVY CONSTRUCTION—LB & CA

▲ OHIO—State Hy. Dpt., Columbus, Zone 15, **Baker & Hickey Co.**, 2170 Eakin Rd., Columbus, O. CA **$5,082,967**, Goodale Blvd. leg of Columbus expressway (first phase). Bids June 25. CD 6/27, under LB.

▲ OHIO—State Hy. Dpt., Columbus, Zone 15, Bids opened 6/25,

O.—**Pickney P. Brewer & Sons Co.**, 7455 Dawson Rd., Maderia, O. LB **$178,541**, est. $184,905 (2 bidders) 21.92 mi. Clermont-Hamilton Co.;

O.—**Chapin & Chapin, Inc.**, Rt. 20 E, Norwalk, O. LB **$420,262**, est. $480,200 Proj. 193, SR 13-(0.00-5.05) 32 mi. F-563 (5) Type T-35, Huron and Richland Counties;

O.—**Codell Constr. Co.**, 125 S. Main St., Winchester, Ky. LB **$4,315,943**, est. $5,345,000 Proj. 190, 2.119 mi. SR 7 (0.00-0-50), (33.83-34.10) FU 431, (10) Wellsville Type T-71 and structures, Colmbiana and Jefferson Counties;

O.—**DeSalvo Constr. Co., Inc.**, 3701 Red Bank Rd., Cincinnati, O. LB **$2,150,000**, est. $2,388,800 (12 bidders) 8/94 mi. SR 69-0.08, S-283, (3) Type -71, and structures, Greene and Montgomery Counties;

O.—**Edgar Spring, Inc.**, Box 122 New Philadelphia, O. LB **$117,444**, est. $156,782, (3 bidders) 16/36 mi. Type T-30, T-35 and B-35, Proj. 205, Belmont Co.;

O.—**W. E. Engle**, McArthur, O. LB **$148,679**, est. $165,000 (7 bidders). 0.435 mi. USR 68-21. 88 Type-35 and structure, Clinton Co.;

O.—**Geo. W. Lathrop & Sons, Inc.**, 1510 Montcalm Ave., Toledo, O. LB **$4,022,165**, est. $4,666,300 (six bidders). 4.807 mi. USR 24A-5.53 Cr Nos. 170 and 277 (Pts 1 and 2) I-1052 (14) S-400 (2) Toledo, Type Pt. 1-T-71 and structures, Type 2-T-50 on B-20 and structures, Lucas Co.;

O.—**Frank Mashuda Companies Associated**, 5556 W. Roosevelt Dr., Milwaukee, Wis. LB **$4,173,519**, est. $4,927,900. (11 bidders) 7.554 mi. USR 19.42 I-529 (12) Type T-71, and structures, Licking Co.;

O.—**Harry Miller Excavating Co., Inc.**, Box 54, Suffield, O. LB Part 1 **$2,662,928** est. $2,656,900; (4 bidders) Part 2 **$3,363,657** est. $3,534,100 (4 bidders) Combination 1 and 2 **$5,868,585** est. $6,191,000. (6 bidders) Pt. 1 6.792 mi. and Pt. 2 7.271 mi. USR 224-17.66 0.00 F-458, (14) Wadsworth, Medina and Summit Counties;

O.—**Oberer Constr. Co.**, 4324 Webster St., Dayton, O. LB **$288,792**, est. $249,600, (5 bidders). 1.281 mi. SR 725, 11.94 12.46 and 14.35 Type T-35, on B-119, Preble Co.;

O.—**Ohio Road Paving Co.**, 30 E. Broad St., Columbus, O. LB **$92,205**, est. $90,760 (1 bidder) 9.89 mi. Type T-30 and T-35 and B-35, Crawford Co.;

O.—**W. J. Seidensticker Co.**, 3585 E. Fulton St., Columbus, O. LB **$469,129**, est. $496,800, (5 bidders) 0.251 mi. USR 23-15.92, Type 71, T-35 and structures Ross Co.;

O.—**Shelly Co.**, Thornville, O. LB **$105,112**, est. $120,389, (2 bidders) Proj. 213, Type T-3 and T-32, Adams Co.;

O.—**Resar Service Co., Inc.**, 215 E. Griswold Rd., Elyria, O. LB **$358,371**, est. $427,400, (5 bidders) 0.788 mi. SR-616 (0.01-0.65) SU 132 (2) Poland, Mahoning Co.;

O.—**Thorpe Constr. Co.**, 109 Union St., Akron, O. LB **$106,364**, est. $121,380, (3 bidders) 12.44 mi. Type 30- and T-35 Proj. 212, Portage and Summit Counties;

O.—**Twin Constr. Co., Inc.**, Rt. 3, Chillicothe, O. LB **$156,337**, est. $178,900, (5 bidders) 0.748 mi. SR 772-6.36, Type T-35, B-119, and structures, Proj. 203, Ross Co.;

O.—Cancelled bids to have been opened June 25, 103.7 mi. Type-30 and 35, Carroll and Columbiana Counties. CD 6/19.

▲† **Hughes Simonsen, Inc.**, 20 N. McGee St., Dayton, O. CA **$1,049,250**, furnishing, installing all mechanical and electrical equipment, Bldgs. 45 research facility and test A/C missile, Wright-Patterson Air Force Base, ENG-14-029-57-74, DAYTON, O. U. S. Eng., P. O. Box 59, Louisville 1, Ky. Bids June 4, awarded June 28. CD 6/14, under LB.

▲ ILLINOIS—Dpt. P. Wks. & Bldgs., Div. Hys., State Fair Grounds, Springfield, rejected bids June 21, paving on U.S. 24 Mount Station to Mt. Sterling, Brown

(Continued on page 132)

How a year in the Antarctic proved that USS "T-1" Steel "can really take it"

THE SKIS on these gigantic 10-ton sleighs are made of USS "T-1" Steel. Over a year ago, 38 of the sleighs went into service as cargo carriers for the Navy's OPERATION DEEPFREEZE in Antarctica. During that time they have been subjected to temperatures around 100° below zero. Towed by powerful tractors, they have scraped and gouged—400 miles in a single trip—across the rock-hard ice of the South Pole. And each sleigh has carried up to 20 tons of cargo per trip.

What has been the effect of this severe service on the skis of USS "T-1" Steel? None. They have remained strong and tough, despite the bitter sub-zero temperatures. No brittleness. No failure. USS "T-1" Steel's hardness has successfully resisted the tremendous abrasive properties of crusted snow and ice. Its toughness has prevented low-temperature impact failure. What's more, its very high yield strength (90,000 psi minimum) permitted the skis to be fabricated from ¼" USS "T-1" Steel plate. Thus, the skis were built *lighter*, yet *stronger*.

The USS "T-1" Steel skis are 154 inches long and 34 inches wide, were cold-formed on a brake press in the shape of troughs. Then the front and back ends of the troughs were notched at the outer line by gas cutting, formed up and together, then welded to make the curved front and back ends of the skis. Welding was done with E-12015 rod.

USS "T-1" Steel is being used to increase strength and durability, while reducing weight and costs in a wide variety of applications from bridge construction to mining equipment. For complete information, write to United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

Sleighs being assembled at landing point in Antarctica. The massive sleighs were designed jointly by the U. S. Navy and Otaco, Limited, of Orillia, Ontario, Canada.

OPERATION DEEPFREEZE

During the present International Geophysical Year (1957-1958), American scientists, with the support of the United States Navy, will, through research at Antarctica, endeavor to advance the world's knowledge of meteorology, glaciology, ionospheric physics, geomagnetism, aurora and air glow, cosmic rays, seismology and gravity.

USS "T-1" CONSTRUCTIONAL ALLOY STEEL

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UNITED STATES STEEL

United States Steel Corporation, Pittsburgh · Columbia-Geneva Steel Division, San Francisco · Tennessee Coal & Iron Division, Fairfield, Ala.
United States Steel Supply Division, Warehouse Distributors, Coast to Coast
United States Steel Export Company, New York

(Continued from page 130)

Co., LB $327,376; bituminous surf. treatment 6.82 mi. F.A.S. Rte. 754 Brussels southeasterly and northerly, Calhoun Co., LB $258,921; Dist. 10 traffic signals, Cook Co., LB $119,326; paving and wid'n. Ill. Rte. 9 from Canton to Banner, Fulton Co., LB $937,209; Dist. 4 patching and bituminous resurf. Fulton-McDonough Counties, LB $214,018; bituminous surf. treatment 2.68 mi. F.A.S. Rte. 835 and 3 span continuous rein.-con. slab bridge over Mud Creek, Perry-Washington Counties, LB $208,693; bituminous surf. treatment 1.98 mi. in Springfield, Sangamon Co., LB $178,375. CD 6/27, under LB.

▲ **Healy Bros. & Co.**, 9504 W. 47th St., Brookfield, Ill., CA $1,187,239, auxiliary outlet sewer, Kilbourn-Leamington unit, CHICAGO, ILL. City, City Hall, Chicago, Ill. Awarded June 27. CD 5/9.

BUILDINGS—LB & CA

▲ **James Burton Co., Inc.**, 300 W. Washington St., Chicago, Ill. CA $2,500,000, 19 story, 187 unit APARTMENT, 4100-10 N. Marine Dr., CHICAGO, ILL. Leon Silvertrust, 1 N. LaSalle St., Chicago, Ill. L. R. Solomon & Assocs., 61 W. Superior St., Chicago, Ill., archts.

▲ **Charles Davis**, 912 S. 74th St., Belleville, Ill. CA Est. $2,500,000 250 brick residences, Twin Echo SUBDIVISION at southwestern edge of Collinsville, COLLINSVILLE, ILL. Keystone Development Co., 912 S. 74 St., Belleville, Ill.

▲ **Arthur G. McKee & Co.**, 2300 Chester St., Cleveland, O. CA Est. $15,000,000, design and construct 67,000 bbl per day CRUDE OIL DISTILLATION UNIT and 30,000 bbl. per day FLUID CATALYTIC CRACKING PLANT, WOOD RIVER, ILL. Standard Oil Co. of Indiana, 910 S. Michigan Ave., Chicago, Ill.

▲ **Inland Constr. Co.**, 232 W. Adams St., Chicago, Ill. CA Est. $3,500,000, general contract 275x400 ft. concrete, steel, brick STORE BLDG. at Mayfair Shopping Center, WAUWATOSA, WIS. Froedert-Mayfair, Inc., 735 N. Water St., Milwaukee, Wis. Marshall-Field & Co., 111 W. State St., Chicago, Ill., lessee. Loebl, Schlossman & Bennett, 430 N. Michigan St., Chicago, Ill., archts. CD 3/3/55.

▲ **Fred Blackwood Co.**, 1820 South Woodward St., Birmingham, Mich. Owner Builds. $6,900,000. 255 brick HOMES, Chapel Hill Estates, Adams Rd. and South Blvd., BLOOMFIELD, MICH.

▲ **Stieber Co.**, 21999 Gratiot Ave., East Detroit, Mich., Owner Builds. $1,750,000, split level brick HOMES, Key West Development, Hendrickson, Kenyon and Rochester Sts., CLAWSON, MICH.

▲ **Westborn Corp.**, E. Llwyd Ecclestone, pres., 300 Lincoln Grosse Point, Mich., Owner Builds. $5,000,000, 20 store SHOPPING CENTER, Westborn Center, Michigan Ave., and Outer Drive, DEARBORN, MICH. CD 5/15.

▲ **Bert L. Smokler Co.**, 1200 Penobscot Bldg., Detroit, Mich., CA Est. $4,000,000, 250 brick HOMES, West Acres, Grange and West Rds., TRENTON, MICH. C. Burton Realty Co., 15100 Fenkell St., Detroit, Mich.

▲ **State Park Home Bldg. Corp.**, 26640 Van Dyke St., Center Line, Mich., Owner Builds. $1,800,000, 100 brick HOMES, State Park Development, Hoover and 11-Mile Rd., WARREN, MICH.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

July 25 Kansas

STREETS AND ROADS

July 25 Kansas

BUILDINGS—BA

▲ **Tex., Fort Worth**—SANCTUARY—BA 8/8—Travis Ave., Baptist Church, c/o Dr. Robert E. Naylor, pastor, 3000 Travis Ave., tile, concrete, steel, sanctuary. $1,000,000. Plans deposit $50. Preston M. Geren, 1607 Fort Worth National Bldg., archt. CD 9/18.

▲ **Tex., Wichita Falls**—HOSPITAL—BA 8/8—Bd. for Texas State Hospitals & Special Schools, 4405 Lamar St., Austin, brick, tile, concrete, stucco hospital addn. $1,000,000. Plans deposit $100 for 2 sets. Preston M. Geren, 1607 Fort Worth National Bldg., Fort Worth, archt. CD 11/23/55.

▲† **Mo., Fort Leonard Wood**—HOUSING—BA On Or About 8/9—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., 1,329 housing units (Capehart), ENG-23-028-58-1. CD 7/20/56, under Commercial Bldgs.

▲† **Tex., Laredo**—HOUSING—BA 8/12 (tentative)—Purch. & Contg. Office, Box 999, Laredo Air Force Base, Laredo, 345 units of Armed Services Family Housing, INV 41-641-58-1. $4,140,000. Plans deposit $100. CD 2/15/56, under Commercial Bldgs.

▲ **Mo., Kansas City**—MOTEL—BA 8/30—Prom Investment Co., c/o Abe Yeddis, 7500 E. 12th St., Kansas City, Mo., motel, incl. swimming pool, $4,000,000. Windrom, Haglund & Venable, Chisca Hotel, Memphis, Tenn, archts. Manuel Morris, R.R. Exchange Bldg., Kansas City, Mo., local archt. CD 3/12.

HEAVY CONSTRUCTION—LB & CA

† **Construction Industries, Inc.**, Salina Kan. CA $974,533, Sch. 1; CA $767,762, Sch. 2, CA $581,859, Sch. 3, Group III buildings, Grand Forks Air Force Base, Inv. 25-066-57-85, GRAND FORKS, N. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Grand Total $2,324,154. Bids May 24. CD 5/31, under LB.

▲ **KANSAS**—State Hy. Comn., Masonic Temple, Topeka, Kan.—**Grosshans & Petersen, Inc.**, Marysville, Kan., CA $1,033,999, grading and surf, for detour 11.153 mi. beginning approx. ½ mi. southwest of Jct. U. S.-50 and k-150 near east edge of Olathe, thence northeasterly on US-50, Pts 11, 111, and 1v, Proj. 50-46 1 02-3 (11), Johnson Co.;

Kan.—**Midwest Precote Co.**, 8600 East 17th St., Kansas City, Mo., CA $565,041, b. conc. surf. for detour 11.153 mi. beginning approx. ½ mi. southwest of Jct. US-50, and K-150 near east edge of Olathe, thence northeasterly on US-50, Proj. 50-46 1 02-3 (11), Pts 1, 11, 111 and iV, Johnson Co.;

Kan.—**Stannard Constr. Co.**, 519 S. Broadway St., Wichita, Kan., CA $874,679, c. conc. 7.149 mi. beginning at east city limits of Ogden, thence northeasterly on K-18, Proj. No. 18-81 f 082-1 (6), Riley Co. Grand total $2,473,719. Bids June 6. CD 6/13, under LB.

▲† **Ottinger Constr. Co.**, Box 12035, Fort Worth, Tex., CA $2,336,669, rectification and imprvs. to Brays Bayou Old Main to South Main and Stella Link Rd. to Chimney Rock Rd. near Houston, ENG-41-243-57-73, TEXAS. U. S. Eng., Box 1229, Galveston, Tex. Bids June 17. CD 6/27, under LB.

▲ **C. O. Holden Constr. Co.**, Box 1438, Snyder, Tex. CA Est. $2,000,000, products pipe line, Abilene to Wichita Falls, Tex., products Terminal, Wichita Falls, TEXAS. Cosden Petroleum Corp., Permian Bldg., Big Spring, Tex. CD 5/15.

▲ **COLORADO**—State Hy. Dpt., 4201 E. Arkansas St., Denver,

Monaghan & Smith and Platte Valley Constr. Co., Derby, Colo., CA $1,530,367. grading, structures 20.603 mi. State Hy. 8, Agate and Limon, Colo. Proj. In 005-4 (7). Elbert Co. Bids July 10. CD 7/2.

▲ **COLORADO**—State Hy. Dpt., 4201 E. Arkansas St., Denver,

Amis Constr. Co., 1647 Exchange Bldg., Oklahoma City, Okla., CA $1,154,139, grading, structures 2.965 mi. State Hy. 2, between Steamboat Springs and summit of Rabbit Ears Pass, Colo. Proj. F 005-2 (12), Routt Co. Bids July 9. CD 7/2.

▲† **C. F. Lytle Co.**, 250 Ins Exchange Bldg., Sioux City, Iowa. CA $1,707,145, constr. Vega Dam and relocation of County Rd., Collbran Proj., near Collbran, Spec. DC 4898, COLORADO. Bureau Reclamation, Dpt. Interior, Post Office Bldg., Grand Junction, Colo. Bids June 6. CD 6/17, under LB.

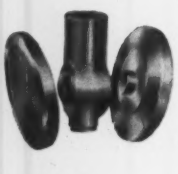
WOOD
GATE VALVES

First Choice for Extreme Reliability

Because of their inaccessibility underground, repairs to gate valves are always time-consuming, expensive, and a source of annoyance. And interruptions in service while repairs go on are hazardous for the community.

For these reasons, R. D. Wood Gate Valves are designed to function for generations no matter what the conditions. They are rugged in construction, fully bronze mounted, and tested to 300 lb. hydrostatic pressure. Designed for working pressures conforming to AWWA specifications.

Available with mechanical joint or flange-type pipe connection



SIMPLE IN DESIGN

Only three moving parts—a spreader and two discs which are free to revolve their complete circumference while being raised or lowered. Gates are lifted entirely clear of valve openings, providing unobstructed flow.

BUILDINGS—LB & CA

▲ **The John Larson Co.**, Box 414 Bismarck, N. D., CA $1,078,700, HOSPITAL addn., DETROIT LAKES, MINN. St. Mary's Hospital, Sister Bennet, OSB, supt. and admin., Detroit Lakes, Minn. Bids June 18. CD 6/28, under LB.

▲ **Winn-Senter Constr. Co.**, 901 W. 43 St., Kansas City, Mo., CA $4,536,470, General contract OFFICE and PARKING GARAGE, 8th to 9th Sts. and Main to Walnut St., KANSAS CITY, MO. Downtown Redevelopment Corp., c/o Forest D. Byars, secy., Hotel Continental, Kansas City, Mo. Bids Apr. 10. CD 3/12;
Westinghouse Electric Corp., 101 W. 11th St., Kansas City, Mo., CA $460,000, elevator contract for office Kansas City, Mo.).

▲ **C. E. Vollmer Constr. Co.**, 840 N. Main St., Wichita, Kan., CA $2,191,000. general contract South HIGH SCHOOL, WICHITA, KAN. Bd. Educ., Wichita, Kan. Bids June 18. CD 5/23;
Moore Robertson, 924 E. Douglas St., Wichita, Kan., CA $649,725, mechanical contract for high school (Wichita, Kan.).

▲† **J. G. Watts Constr. Co.**, Wallace Rd., Salem, Ore., LB $2,513,746, est. $3,215,239 (9 bidders), constr. TM site 179 military installation, Inv. 57-68, KALISPEL, MONT. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids July 2. CD 6/7, under LB.

▲ **Refining Eng. Co.**, Box 1558, Tulsa, Okla., CA $3,250,000; general, incl. all work, furnish, install at owner's oil refinery a new boiler and cooling tower and new unifier and platformer equipment, LAUREL, MONT. Farmers Union Central Exchange, Inc., 1200 South Concord St., South St. Paul, Minn. Bids July 8. CD 2/27.

▲† **L. R. Foy Constr. Co.**, 234 W. 4th St., Hutchinson, Kan., CA $1,695,622, WEAPONS MAINTENANCE SHOP AND WAREHOUSE, at Pubelo Ordnance Depot, ENG-25-066-57-43, PUEBLO, COLO. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids June 25. CD 7/1, under LB.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

July 31 California

STREETS AND ROADS

July 25, 31, August 1 California

HEAVY CONSTRUCTION—LB & CA

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento,
Peter Kiewit Sons Co., 442 Post St., San Francisco, Calif., CA $7,235,235, constr. 1.4 mi. section Central Freeway between 0.4 mi. East of S. Van Ness Ave. and Turk St., portion Multi Lane, 2 level welded steel rein.-con separation structure, ramp approaches, city streets graded., hy. electical sys. installed, San Francisco Co., IV. S.F. 2 S.F. Bids June 19, awarded July 3. CD 6/21, under LB.

▲ **Central Constructors** (joint venture of Pacific Allied, Charles J. Rounds Co., R. A. Watson & MacDonald & Kruse) c/o P.O. Box 462, Verdugo City, Calif., CA $4,420,763, (5 bidders) Line A, portions of Lines C & D, Storm Drain Bond Issue Proj. No. 73, Unit No. 2, Central Ave. and 114th St., Storm Drain, LOS ANGELES, CALIF. Los Angeles Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids June 21, awarded July 2. CD 5/24.

▲† **George A. Fuller Co.**, 3100 W. 8th St., Los Angeles, Calif., CA $3,012,290, Special Test Track Facilities, Edwards Air Force Base, ENG-04-353-57-75, MUROC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids June 26, awarded June 27. CD 7/8, under LB.

▲† **Hawaiian Dredging & Constr. Co., Ltd., J. H. Pomeroy & Co., Inc., and Koster & Wyth**, P. O. Box 3468, Honolulu, T. H., CA $1,764,000, NAVAL HEADQUARTERS BLDG., NBy 3313, MARIANNAS ISLANDS, GUAM. Bureau Yard & Docks, c/o Res. Officer in Charge of Constr., 333 Fell St., San Francisco, Calif., bids June 12. CD 6/19, under LB.

▲† **Empire Gas Eng. Co.**, 8247 South Dixie Hy. Miami, Fla. CA $5,543,619, POL and hydrant refueling, systems, NBy 3325, MARIANNAS ISLANDS, GUAM. Bureau Yards & Docks, c/o Res. Officer in Charge of Constr., 333 Fell St., San Francisco, Calif. Bids June 5. CD 6/10, under LB.

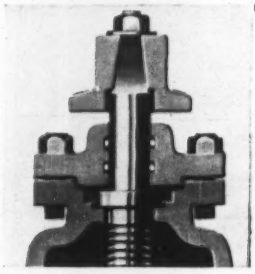
BUILDINGS—LB & CA

▲† **Rutherford Constr. Co.**, P.O. Box 915, Albuquerque, N. M., CA $1,369,000, enlisted men's BARRACKS, Army Electronic Proving Ground, ENG-04-353-57-92, FORT HUACHUCA, ARIZ. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids June 11, awarded June 24. CD 6/17, under LB.

▲ **Howard J. White, Inc.**, 870 Charleston Rd., Palo Alto, Calif., LB $1,208,680 (6 bidders) rein.-con. structural steel. Lewis Theeman JUNIOR HIGH SCHOOL, Atascadero Rd., PALO ALTO, CALIF. Palo Alto Unified School Dist., 545 Channing Ave., Palo Alto, Calif. Bids July 2. CD 6/17.

▲ **Harris Constr. Co.**, P. O. Box 109, Fresno, Calif. LB $1,143,662, (6 bidders) constr. THIRD STREET SCHOOL TUOLUMNE STREET SCHOOL AND PARLIER AVE. SCHOOL, PARLIER, CALIF. Parlier School Dist., P. O. Box 38, Parlier, Calif. Former bids rejected. CD 5/15, under LB.

▲ **Steed Bros.**, P.O. Box 350, Alhambra, Calif., LB $2,419,000, est. $2,000,000 (9 bidders) 4 story, 104,000 sq. ft., rein.-con. PRESBYTERIAN INTERCOMMUNITY HOSPITAL, WHITTIER, CALIF. Presbyterian Intercommunity Hospital, 215 W. Hadley St., Whittier, Calif. Bids June 21. CD 6/3.



R. D. Wood Gate Valves also now available with O-Ring Stuffing Box seal when specified.

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R. D. WOOD COMPANY

Public Ledger Building, Independence Square, Philadelphia 5, Pa.

Manufacturers of Mathews Hydrants and "Sand-Spun" Pipe (centrifugally cast in sand molds)

CANADA

HEAVY CONSTRUCTION—LB & CA

▲ **S. D. Miller & Sons**, 6999 Cote Des Neiges Rd., Montreal, Que. CA $1,015,790. regulating works and roadway underpass St. Lambert Lock, Lachine Section of St. Lawrence Seaway, QUEBEC. St. Lawrence Seaway Auth., No. 2 Temporary Bldg., Ottawa, Ont. Awarded June 28. CD 5/10, under LB.

▲ **J. D. Stirling Ltd.**, 940 Cote de Liesse Rd., Montreal, Que. CA $1,294,348. substructures south of Pier 28 Honore Mercier Bridge exten., Lachine Section of St. Lawrence Seaway, QUEBEC. St. Lawrence Seaway Auth., No. 2 Temporary Bldg., Ottawa, Ont. Bids May 26, awarded June 28. CD 4/18, under LB.

BUILDINGS—LB & CA

▲ **Perini Ltd.**, 150 Kent St., Ottawa, Ont., CA $7,100,000 5 story with 3 wings, about 47x350 ft. each and 2 wings 47x200 ft. each, rein.-con., structural steel concrete block Public Works Department HEADQUARTERS BLDG., Riverside Dr., OTTAWA, ONT. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids May 8, awarded June 27. CD 5/29, under LB.

▲ **Woodall Constr. Ltd.**, 1711 Walker Rd., Walkerville, Ont., CA Est. $1,000,000, 3 story, bsmnt., 85x180 ft., steel frame University Library, addn. to college, WINDSOR, ONT. Assumption University, 398 Huron Line, Windsor, Ont. Bids July 3, awarded July 4. CD 6/20.

▲ **Louis Donolo, Inc.**, 8320 St. Lawrence Blvd., Montreal, Que., CA Est. $1,000,000; 10 story, about 112x100 ft. automatic PARKING GARAGE, Mansfield and Burnside Sts., MONTREAL, QUE. Owner, c/o E. & R. Collette, 307 Portland Ave., Royal, Que. Awarded June 26. CD 6/21.

ALASKA

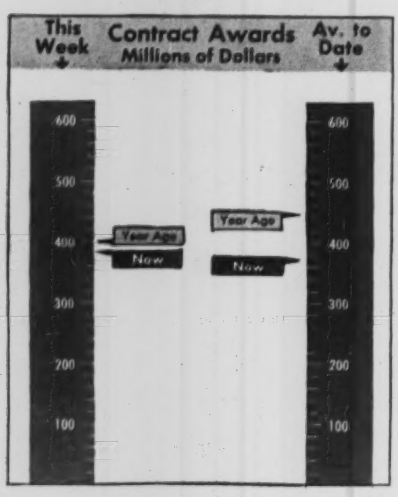
BUILDINGS—LB & CA

▲ **C. F. Braun Co., Ltd.**, Box 1050, Sarnia, Ont., CA Est. $25,000,000, OIL REFINERY, on 273 acres, near BRONTE, ONT. Cities Service Oil Co., Ltd., 1179 Yonge St., Toronto, Ont.

(Proposal Advertisement see pp. 147 to 149)

Construction Scoreboard

Activity this Week



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 29 wks 1957	Chge '56-'57 %
	millions		
Federal	$42.2	$1,610.1	+51
State and Municipal	141.9	4,094.7	+11
Total Public	184.1	5,704.8	+20
Total Private	202.3	4,936.2	−39
U. S. Total	$386.4	$10,641.0	−17
By Type of Work			
Waterworks	$4.6	$212.0	+0.3
Sewerage	28.5	322.7	−5
Bridges	2.6	410.9	+17
Highways	53.3	1,689.0	+25
Earthwork, Waterways	10.3	655.3	+41
Buildings:			
Public, Excl. Housg.	41.9	1,282.7	+10
Public Housing	11.8	403.0	+100
Private Housing	79.7	1,744.1	−47
Commercial	54.0	1,017.0	−2
Industrial	62.5	1,907.7	−43
Unclassified	37.2	996.6	−6
U. S. Total	$386.4	$10,641.0	−17

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

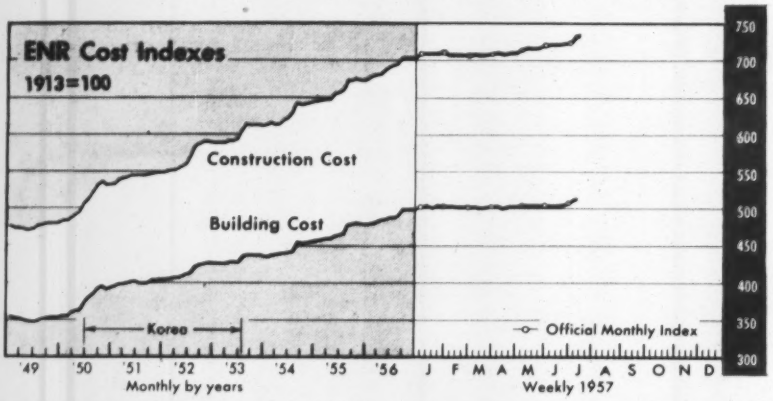
NEW CAPITAL FOR CONSTRUCTION

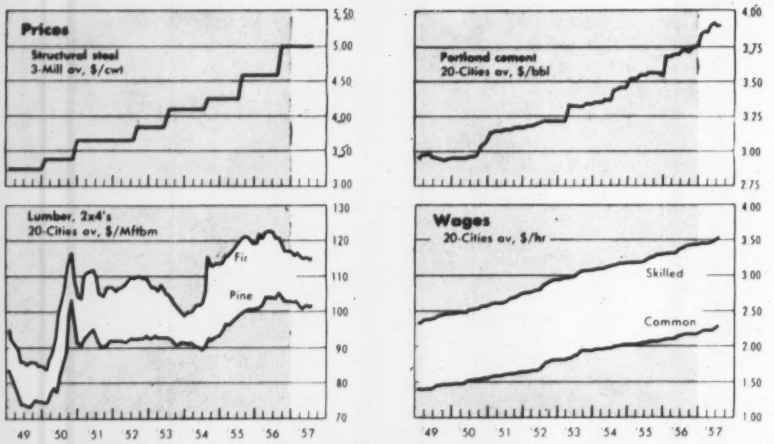
	Week of July 11	Cum. 28 wks 1957	Chge '56-'57 %
	millions		
Corporate Securities	$87.7	$3,350.4	+41
State and Municipal:			
All Except Housing	29.7	2,910.0	+10
Housing	...	155.8	+268
Federal Loans	5.6	149.7	+91
Federal Aid	...	2,085.0	+95
Total Nonfederal	$122.9	$8,651.0	+39
Federal Appropriations:			
In U. S.	...	$305.1	−72
Outside U. S.	...	16.8	+13
Total New Capital	$122.9	$8,972.9	+23

Cost Indexes as of Now

ENR INDEXES (1913 = 100), 20-cities' average	Week of July 11 1957	% Change from June 13 1957	July 12 1956
Construction Cost	735.16	+1.7	+5.7
Building Cost	515.19	+2.1	+5.2

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518

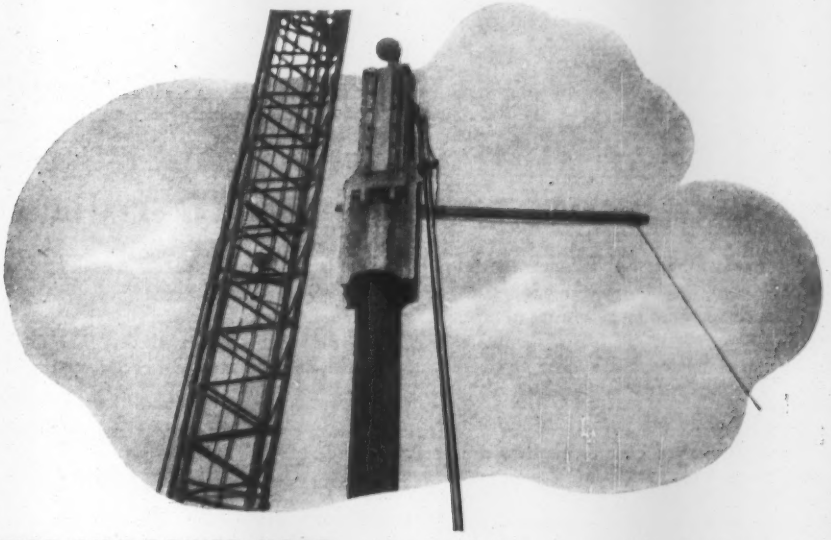




ENR COST INDEXES IN 22 CITIES, 1913 = 100

City	Construction Cost July 1957	Construction Cost Percent Change from last Month	Construction Cost Percent Change from last Year	Building Cost July 1957	Building Cost Percent Change from last Month	Building Cost Percent Change from last Year
Atlanta	523	0	+4.2	442	0	+4.2
Baltimore	663	+3.1	+11.5	511	+1.6	+4.1
Birmingham	556	0	+1.1	457	0	+1.9
Boston	747	+0.1	+0.6	519	+0.2	+3.3
Chicago	831	0	+5.7	523	+2.3	+4.3
Cincinnati	743	+4.2	+5.1	499	+2.1	+4.2
Cleveland	856	0	+4.5	522	0	+2.8
Dallas	525	0	+0.1	439	0	+1.8
Denver	702	0	+4.8	510	0	+4.0
Detroit	823	0	+2.9	539	+0.7	+3.9
Kansas City	735	0	+3.6	505	+0.4	+1.6
Los Angeles	731	0	+0.2	501	+1.0	+2.6
Minneapolis	781	0	+4.6	530	0	+2.8
New Orleans	572	0	+2.2	467	0	+3.3
New York	851	−0.1	+1.5	577	−0.1	+2.2
Philadelphia	780	0	+5.9	560	0	+4.1
Pittsburgh	762	0	+11.2	541	0	+8.2
St. Louis	789	0	+4.5	538	0	+3.3
San Francisco	759	+0.1	+5.6	493	+0.9	+5.0
Seattle	751	+0.3	+4.8	458	+0.5	+4.0
U. S.—20 Cities' average	724	+0.4	+4.2	507	+0.5	+3.6
Montreal	586	0	+4.7	451	0	+3.2
Toronto	609	−0.2	+4.5	470	+0.2	+3.6

AIR HOSE . . . for heavy-duty, high pressure service—defies rough handling, weather, hard abrasion.



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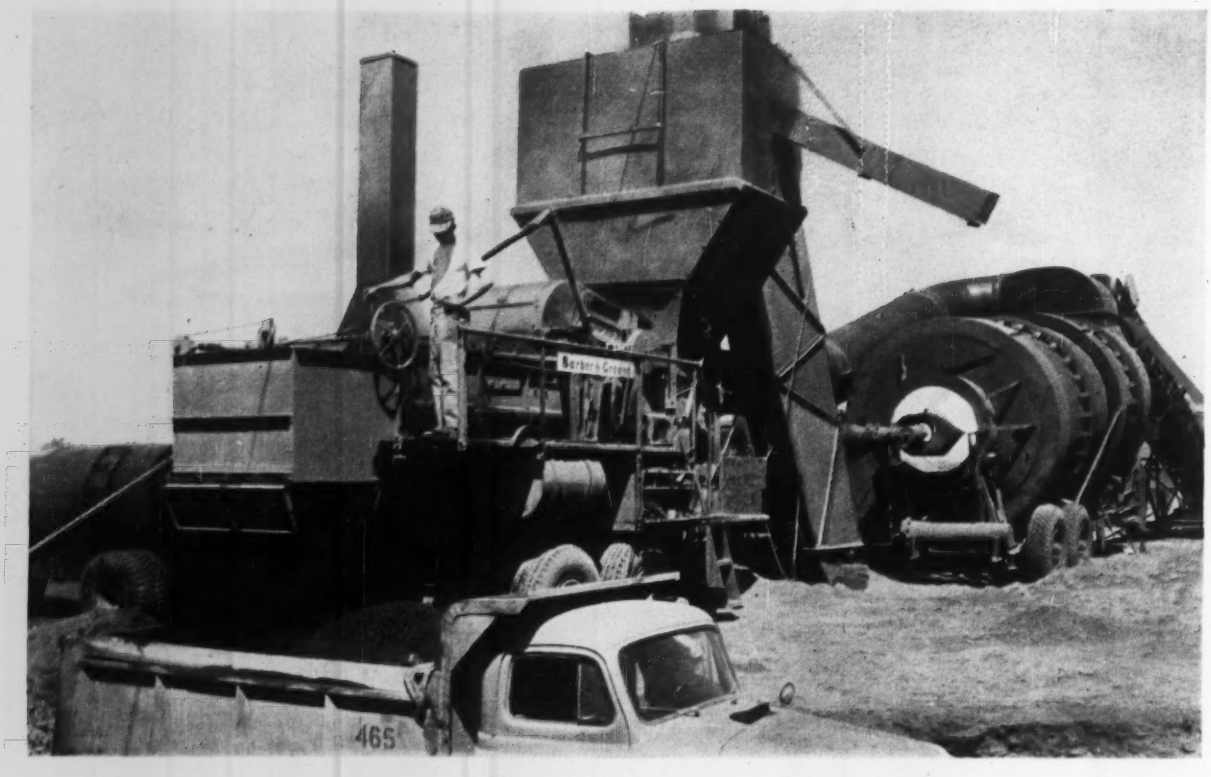

48 hours after this picture was taken, this asphalt plant was operating 70 miles away

In its first season of operation, this Barber-Greene Model 848 continuous plant was moved to six different job sites . . . produced 111,315 tons of quality hot mix in 555 hours of operation for an average of 200 tons per hour.

All plant components are mounted on rubber-tired chassis for over-the-road towing at truck speeds.

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Typical of the many Barber-Greene plant owners, this Minnesota contractor operated with the basic equipment first and later purchased the Gradation Control Unit. He can meet any specification, and has the flexibility of towing the Gradation Unit only to those jobs requiring screening after drying.

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Plant operation is based on the Barber-Greene continuous principle which is inherently automatic. Once the controls are set, the plant produces at top efficiency and accuracy.

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Same continuous plant with Gradation Control Unit added.

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CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

How Competitive Are the Suppliers?

Armed with new figures on industrial concentration, Congress prepares for hearings on administered prices

How are steel prices set?

Who decides how much a contractor will pay for cement?

How big are the big suppliers to the construction industry—and how competitive are they?

Those are some of the questions that are going to come up soon as inquisitive trust-busters in Congress prepare for a new round of hearings on big business and its pricing policies.

In its new hunt for evidence of monopoly and manipulated prices, critics of big business expect to be armed with some fresh ammunition showing the amount of industrial concentration from 1947 to 1953 (see table).

How potent the ammunition will be depends on how it is used. The exhaustive report sets up some targets for the Congressional inquiry—but it doesn't take aim.

The report, entitled "Concentration in American Industry," is a massive collection of statistics and charts which avoids drawing any conclusions.

At the same time the Senate antitrust subcommittee is bringing out its concentration report, its chairman—Sen. Estes Kefauver—is launching a new set of hearings into what the senator calls "administered pricing": Prices set by the administrative action of business managers who have the power to set prices at alternative levels, with relatively little or no relation to competitive circumstances in the market place.

Actually, there is no formal connection between issuance of the concentration report and the beginning of the administered price hearings. However, there is no doubt that one thing Sen. Kefauver's new hearings will try to show is a close identity between industries in which prices are "administered" and those having a high level or an increasing level of concentration.

There's no telling for sure how the administered price hearings will develop. First target is the steel industry, and U. S. Steel's Roger Blough is likely to bear the brunt of the questioning in connection with the recent steel price hike.

The cement industry—where the eight largest companies, according to the new concentration figures, accounted for almost 50% of the total industry shipments in 1954—is a likely target later on, as the Kefauver committee picks individual industries for a going over.

Issuance of the concentration report puts the current activities of the Kefauver committee in the middle of a growing controversy. Even before the report was publicly released, a counter-attack—led by the U. S. Chamber of Commerce—challenged the validity and usefulness of the statistical measurement of industrial concentration.

All the material in the report is based on company figures from the census of manufacturing conducted by the Commerce Dept.'s Bureau of Census. In 756 pages of tables, the report shows the extent to which the large companies have either added to their position or lost ground in broad particular market classifications from 1947 to 1954.

These broad industry classifications are known to the technicians as "four-digit industries," because that is how they are catalogued under the standard industrial classification system used by the Census Bureau.

In addition, the report goes beyond this broad industry comparison with 1947 by giving concentration ratios for hundreds of narrower industry classifications for the year 1954 only. This material in the report is used to show to what extent output in these so-called "five digit industries" is in the hands of the 4, 8, and 20 largest companies.

Take construction and mining machinery, a four-digit broad industry classification. The figures show the four largest companies had 20% of total industry shipments in 1954, with the next four largest companies having 9%. This would indicate—even to the anti-trusters in the government giving the report a close reading—that even the

Here's How the Market Looks . . .

Producers of these items . . .	. . . with this value of shipments . . . (thousands of dollars)	. . . share this percent of the market		
		The 4 largest	The next 4	The next 12
Construction and mining machinery	**$1,159,170**	**20%**	**9%**	**19%**
Cranes, except construction, power and overhead travel	119,907	27	16	24
Power cranes, draglines and shovels	268,691	44	26	23
Mixers, pavers, and related equipment	70,967	34	19	25
Contractors off-highway wheel tractors	46,355	85	14	F
Specialized mining machinery and equipment	61,515	53	17	19
Crushing, pulverizing and screening machinery	64,896	37	18	26
Excavating and road construction machinery	280,234	44	12	17
Railway maintenance of way equipment	12,134	62	21	16
Other construction, mining and similar machinery	276,971	22	11	17
Asphalt	**221,681**	**45**	**18**	**20**
Cement, hydraulic	**807,338**	**31**	**17**	**25**
Gypsum products	**274,519**	**89**	**8**	**2**
Concrete products	**677,423**	**9**	**3**	**5**
Structural shapes and piling	**506,942**	**92**	**5**	**..**
Millwork	**846,413**	**7**	**3**	**8**
Plywood	**504,725**	**16**	**8**	**16**
Fabricated structural framing and wood laminates	**32,320**	**63**	**16**	**13**
Prefab wood buildings	**174,088**	**40**	**10**	**18**

eight biggest companies together account for less than 30% of the industry shipments: Not much indication of a lack of competition and nothing close to monopoly.

But look at some of the five-digit industries that make up construction and mining machinery. In one—power cranes, draglines and shovels—the biggest four companies in 1954 accounted for 44% of industry shipments and the next four had another 26%, giving the top eight companies about 70% of this market.

The steel industry follows this in certain products. No one claims the top four steel companies have over 90% of the industry's business. But in one important five-digit classification—structural shapes and piling—the report shows the four biggest companies accounted for 92% of industry shipments in 1954.

It's this sort of thing in the report that is both its strongest point and its weakest: It is the most exhaustive and up-to-date statistical picture of industrial concentration the antitrusters have available, but it suffers from many serious shortcomings inherent in the figures used.

For one thing, critics point out, it is natural that the narrower an industry classification is drawn, the higher the ratio of concentration is likely to be. For some industries and products, the narrow classification and the concentration ratio it reflects may be significant—for others, meaningless. But the report itself makes no effort to weed out meaningless figures or identify meaningful figures.

Another serious limitation is that the census figures and industry definitions—basis of the report—can be too broad and too narrow to define real markets. Neither is any account taken of the very important competition between industries and products, which minimizes the effects of concentration.

Sum total of the criticisms is that concentration ratios are only a clue to tell where to look for possible monopoly—and often only a very poor clue.

Cement Strike Poses New Threats

Widespread disruption of construction schedules expected; contractors foresee higher prices

Many of the nation's contractors watched their projects grind to a halt this week as the strike by cement production workers continued to drag on. As they watched, they pondered these questions:

- When will the strike end?
- Will cement prices be increased: and if so, how much?

To the first question, no one close to the situation seemed to have the answer. Neither the union nor the large cement manufacturing companies appeared eager to rush into a settlement.

There was one encouraging note. While the Federal Mediation and Conciliation Service officials were trying to arrange meetings between striking locals of the United Cement, Lime and Gypsum Workers, top union officials walked in and asked for sessions.

But, early this week, only five concerns had settled with the union. They are: Marquette Cement Manufacturing Co., Oglesby, Ill.; Missouri Portland Cement Co., St. Louis, two plants; Volunteer Portland Cement Co., Knoxville, Tenn., one plant; Aetna Portland Cement Co., Bay City, Mich., one plant; and National Cement Co., near Birmingham, Ala., one plant.

At last report, this left 65 of the nation's 170 cement producing plants idle. The unions are holding fast to terms reached with the Marquette concern. These included:

- Average hourly pay rise of 13.6 cents.
- Increased differentials for second and third shift work.
- Double time for work over 12 hours a day.
- Improved vacation schedules.
- Premium pay for Sunday work.

• Knotty problems—The value of the package is estimated at approximately 16.5 cents an hour. That, however, has not been the stumbling block. The knotty problems are retroactivity and the subcontractor's clause (ENR July 11, p. 134).

The unions hope that the Marquette settlement can be used as a pattern; large firms apparently are opposed to such a pattern.

In fact, officials of the government's Mediation Service noted that so far most of the negotiating activity has centered around the smaller producing plants. Big companies were "watching and waiting".

This week, however, there were indications that a break may come soon in the stalemate. Any move on the part of one of the major producers to move into a bargaining session could hasten settlements throughout the industry.

• Price boosts hinted—Contractors watching the situation are convinced that the eventual settlements will result in price increases.

But production sources generally are reluctant to quote figures.

A Marquette spokesman said the contract terms "may result" in higher cement prices this fall.

An official at Penn-Dixie Cement Corp. said, "No comment," when asked if prices would change between now and Sept. 30, but added that prices are "very apt" to change in the fourth quarter.

In Chicago, no price increases are expected before Oct. 1, while Seattle, San Francisco and the northern California area are confident that prices will not change before Jan. 1. Contractual agreements assure this.

• Distributors' estimates—ENR's price check showed, however, that distributors in Detroit, Chicago and San Francisco are anticipating price increases of about 15 cents a barrel.

In addition, these sources indicated that there probably would be a slight advance in price before Oct. 1 for ready-mix concrete.

Meanwhile, effects of the strike caught up with construction schedules swiftly.

Philadelphia's supplies are almost non-existent. The area's largest bricklaying firm, John B. Kelly, Inc., can carry on through this week, working from stockpiles. After that, it will have to stop all work.

• Road work halted—Concrete placement has stopped on a six mile stretch of the four-lane Harrisburg-Baltimore Expressway, near York, Pa., along with similar work on Philadelphia's Schuykill Expressway.

A spokesman at the Philadelphia District of Army Engineers said that work will halt on the $12 million flood control dam and reservoir at Bear Creek, near White Haven, within a few days.

At Patrick Air Force Base, Jacksonville, Fla., 400 workers building missile facilities have been laid off. It is estimated that within 10 days to two weeks, 600 to 800 workers at other area bases also will be "furloughed" unless the cement strike is settled quickly.

The condition is so serious that Army Engineers have appealed to Washing-

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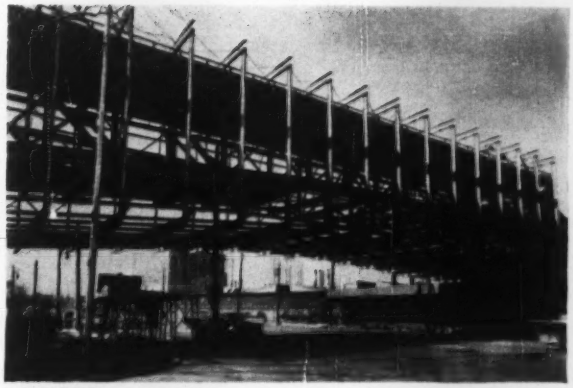
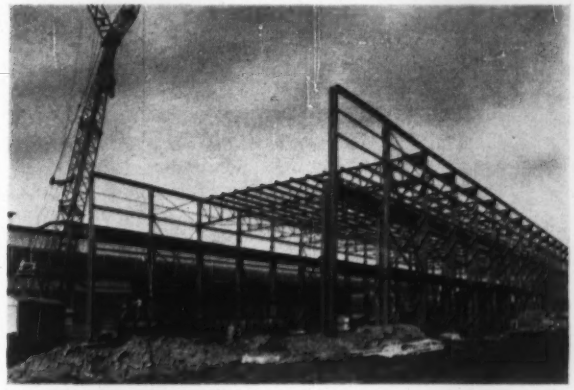
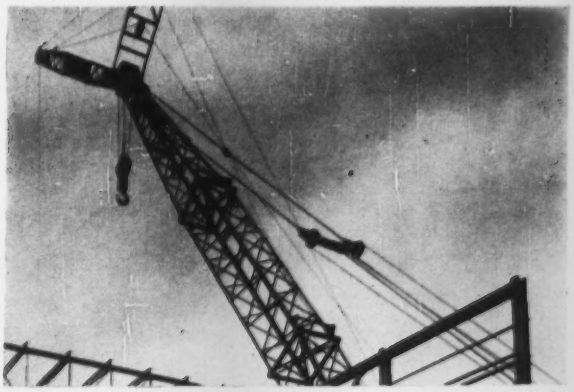


BRIDGES Here's one put up in Detroit with RB&W High Strength Bolts. They were used because they install faster than rivets, stay tight, withstand all kinds of cyclic loads, including wind, vibration.

BUILDINGS More and more multi-story steel framed buildings are being erected with high tensile bolts. It means faster construction, dollar-savings per ton of erected steel, less noise, more safety.



INDUSTRIAL PLANTS Erectors of mills, power houses, heavy industrial works and factories are taking advantage of RB&W High Tensile Bolts to give joints more strength in shear and in tension against impacts and stress changes due to operation of cranes and heavy machinery.



EQUIPMENT RB&W High Strength Bolts are doing a permanent retightening job on heavy duty equipment that has deteriorated due to rivets failing. They've saved large costly cranes. By specifying the use of high strength bolts in your new equipment, you can avoid such problems entirely, save money and downtime.

AISC approves the use of high strength bolts anywhere in place of rivets. Local building codes permit it. So there's no reason why you shouldn't get the savings in time and costs they offer... the better, stronger joints they make.

And remember—the quality and uniformity of RB&W High Tensile Bolts and their conformance to ASTM A325 have been confirmed in a report by the nationally known New York Testing Laboratories, Inc.

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ton to channel cement supplies to the Air Force Missile Test Center.

• **Other casualties**—In the New York City area, several projects have been virtually halted. They include:

• The $15 million Long Island Expressway.

• Two $15 million hangars at Idlewild Airport.

• An $8 million pier.

• Three housing projects with a total cost of $36.8 million.

Two sections of the New York Thruway also have been affected. They are the Erie Spur, extending south from Buffalo, and the Thruway's connection with New Jersey's Garden State Parkway.

In Connecticut, Highway Commissioner Newman E. Argraves said the $445 million facility is threatened as some contractors halted paving last week.

The 126 mile Connecticut Expressway, which runs across the state, had been scheduled for completion Jan. 1.

Work also has been slowed on Boston's $50 million Central Artery, a one mile road and tunnel.

Approximately 200 construction jobs in Wilmington, Del., also have been brought to a halt.

• **Imports considered**—Some major construction concerns in the Philadelphia area are considering importing Swedish cement if the strike continues into August. But, contractors concede there would be problems.

Cost is not one of the drawbacks. But there are others. Imported cement according to one spokesman could be delivered on the dock at Philadelphia for 85 cents a bag compared with $1.10 to $1.25 a bag for Lehigh Valley cement.

But there would be delivery charges from the pier, buyers would have to purchase in larger quantities than normal, they would risk water spoilage during transport and special approval would be needed from architects, engineers and even owners in some cases before imported cement could be used.

Contractor Loses

Court upholds damages against dam combine

The original contractor combine on Box Canyon Dam suffered two legal setbacks last week.

A Spokane County (Wash.) Superior Court judge ruled that the Pend Oreille Public Utility District had the right to cancel the contract of Pacific-General-Shea contractors in 1954 for construction of Box Canyon Dam located on the Pend Oreille River in northeastern Washington.

And, Judge Raymond F. Kelly ruled that the Public Utility District was entitled to damages in its lawsuit against the contracting firm. In mid-August, the court will hear arguments to determine the amount of the damages the contractor must pay.

The ruling came after a trial that lasted more than a full year in superior court. It was the longest trial in Spokane County, and one of the longest in the utility field in the Northwest.

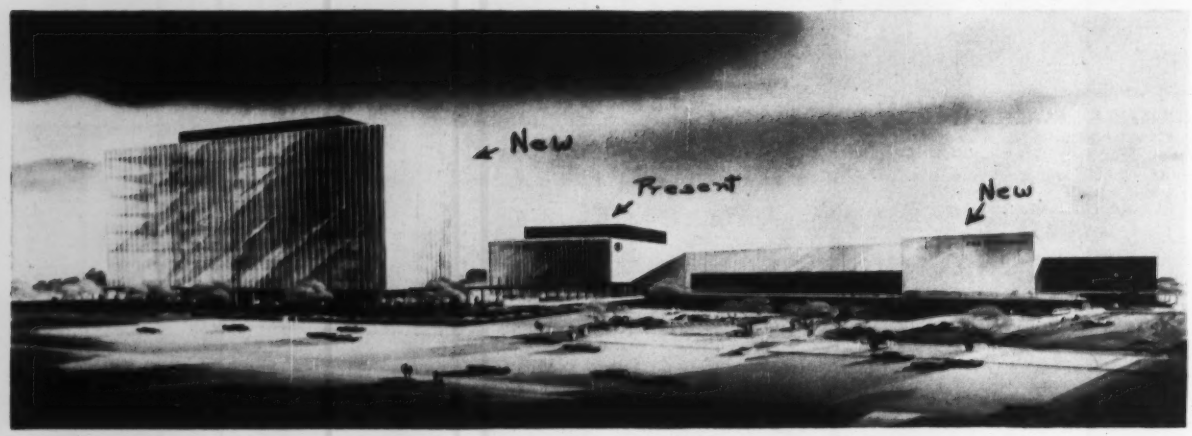
In its suit the Public Utility District sought damages amounting to more than $5.6 million. The PUD claimed a breach of contract, charging that the firm had failed to maintain its schedule.

Part of this claim already has been disallowed. Judge Kelly struck $1.2 million from the claim in March, holding that Pacific-General-Shea was not liable for its failure to go into the river in the 1953-54 season.

Pacific-General-Shea filed a counterclaim for nearly $2.7 million contending that the Public Utility District was not justified in ending the contract and adding that changes made by the PUD in the construction plans had delayed the work.

• **Started in 1952**—Pacific-General-Shea began construction work on Box Canyon Dam in September 1952, seven months after the Federal Power Commission granted the PUD a license for the project. Pacific-General-Shea's work

(*Continued on page 142*)



CBS Television City to Be Doubled in Size

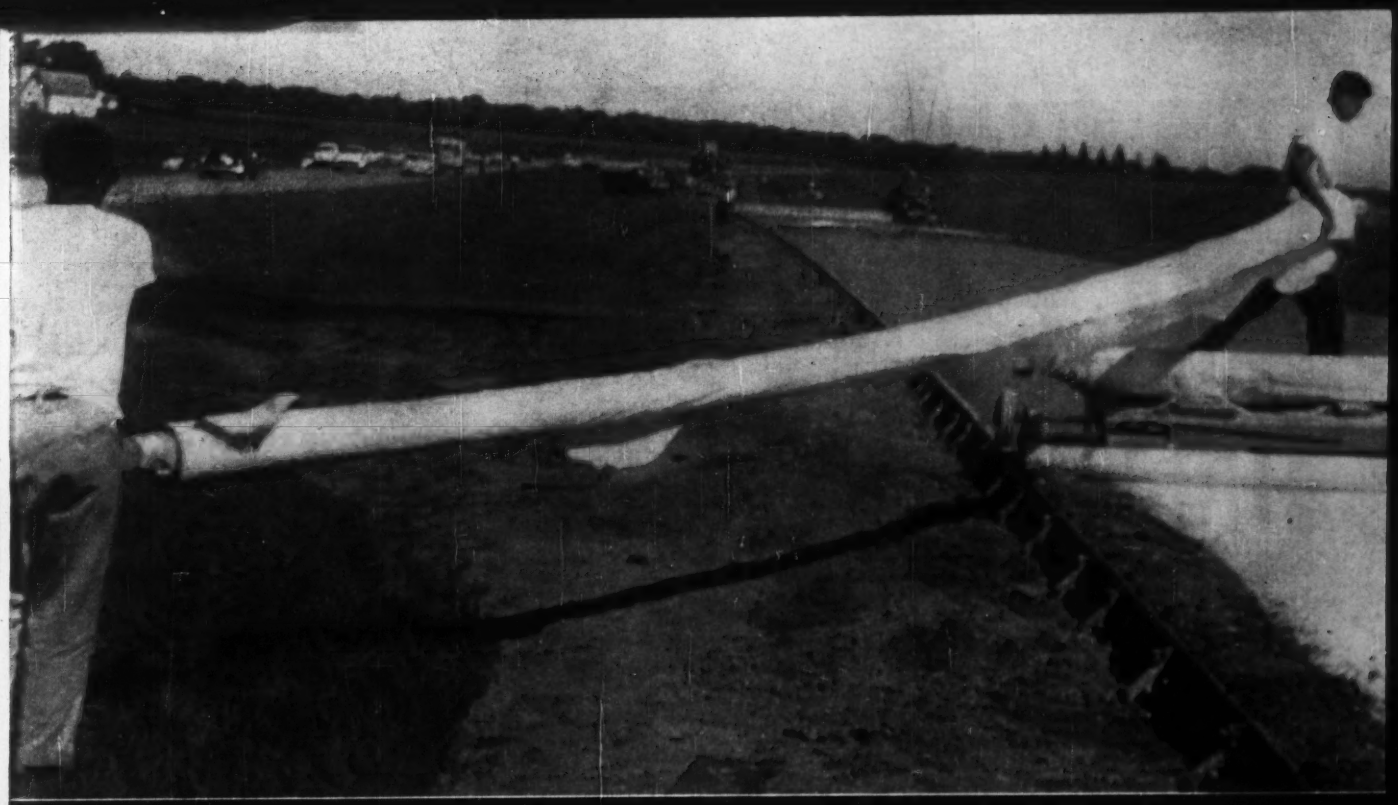
The first phase of an expansion program that will more than double the size of the CBS Television City at Hollywood is expected to start shortly.

The project, at Beverly Blvd. and Fairfax Ave., calls for the construction of a 10 story building containing 160,000 sq ft and a new eight story building containing 110,000 sq ft.

A $5 million to $6 million contract for the larger structure has been awarded to the William Simpson Construction Co. of Los Angeles. This facility is an expansion of the existing production center. A new eight story structure will house administration facilities.

The new facilities will be integrated with existing structures by the planning, architectural and engineering firm of Pereira & Luckman. The expansion is scheduled for completion late next year.

The production center will contain two studios, seven rehearsal halls and additional dressing, prop, scenery and receiving, and storage areas. The studios will be television's largest.



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on the dam was stopped in April 1954 and Morrison-Knudsen, Inc., took over the job the same month.

During the trial, P-G-S officials said that it was impossible to do the construction work in the river in one low-water season and that such work might take 350 days to complete unless the Public Utility District furnished new plans.

However, Judge Kelly pointed out that when Morrison-Knudsen took over the Box Canyon Dam job, it finished the in-water work in 240 days, according to plan.

Pacific-General-Shea contended that Morrison-Knudsen was able to do the work in 240 days because there were design changes. The court, however, held that there were no actual changes in design, although later in construction, river conditions indicated a need for a change in the spillway arch.

• **Must prove damages**—The remaining unknown in the lengthy case is the amount of damages. Judge Kelly has ruled that the Public Utility District's damages from Pacific-General-Shea shall be "of such amount as it can prove."

The proving process itself might be involved, because of the length of the trial and the amount of evidence originally submitted. Evidence and testimony included a transcript of 16,918 pages and 1,300 exhibits.

"Operation Expand"

Seven merger actions involve total of 13 firms

Last week saw a flurry of mergers by companies serving the construction industry with 13 firms involved in seven separate transactions.

The affected companies were:

• Flintkote Co., New York City and Kosmos Portland Cement Co., Louisville, Ky.

• Permutit Co., New York City and Pfaudler Co., Rochester, N. Y.

• Thor Power Tool Co., Aurora, Ill. and Drying Systems, Inc., Chicago.

• Cerro de Pasco Corp., New York City and Lewin-Mathes Co., St. Louis.

• Mississippi Valley Structural Steel Co., Decatur, Ill. and Converse Bridge and Steel Co., Chattanooga.

• Mississippi Valley Structural Steel Co., Decatur, Ill. and Industrial Steel Erection Co., Chattanooga.

• Chain Belt Co., Milwaukee and L. Burmeister Co., Milwaukee.

• **Expansion Move**—Flintkote, after approval by stockholders Aug. 20, will acquire the Kosmos firm for about $15 million. It will issue 189,000 shares of its common stock of $5 par value and 73,000 shares of proposed new convertible preferred stock of $100 par in exchange for all of the outstanding Kosmos stock.

Kosmos had a sales volume last year of $6 million to $7 million and produces more than 2 million barrels of cement a year.

I. J. Harvey, Jr., Flintkote chairman, said the acquisition will be in keeping with Flintkote's policy of controlling its raw materials and diversifying its mining operations.

Permutit Co., manufacturer of water conditioning equipment and ion exchangers and powerplant accessories, will merge with Pfaudler under the name: Pfaudler-Permutit, Inc.

The terms, approved by directors of both companies, but subject to stockholders' approval, will give each Pfaudler shareholder 1.429 shares in Pfaudler-Permutit for each Pfaudler share. Permutit shareholders would receive one share of the merged company stock for each of his shares.

Earlier in the week, Pfaudler bought 25% of the outstanding shares of Permutit stock from the Ward Industries Corp. Pfaudler manufactures industrial glasses and steel processing equipment.

• **Cash transaction**—Acquisition of Drying Systems by Thor Power Tool Co. was a straight cash transaction, but the amount involved was not disclosed. Drying Systems produces process air-conditioning installations and industrial ovens. Thor makes portable air and electric tools.

Cerro de Pasco acquired Lewin-Mathes through an exchange of stock and was reported as a $12.7 million transaction. Lewin-Mathes manufactures copper and brass tubing.

Terms of the two purchases by Mississippi Valley Structural Steel Co. were not announced. The Industrial Steel Erection Co. was affiliated with the Converse Bridge and Steel Co., Inc. as the erection organization. Both will be operated by the buyer as Converse Division of the Mississippi Valley company.

Chain Belt acquired the Burmeister firm through an exchange of stock but the amount involved was not disclosed. Chain Belt manufactures ready-mix concrete and roadbuilding equipment.

Burmeister produces concrete mixing and bulk handling equipment. The concern now will be operated as a division of Chain Belt.

Diversification seemed to be the theme running through all of the recent mergers.

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NLRB to Study Craft Disputes Policy

Labor Board asks National Joint Board to explain its position on handling jurisdictional disputes

The National Labor Relations Board has given the National Joint Board for the Settlement of Jurisdictional Disputes in the Construction Industry an opportunity—good until Aug. 1—to explain and defend its role as supreme arbiter of jurisdictional disputes in the construction industry.

Surrounded by mounting criticism of its handling of inter-craft disputes over work assignments, the NLRB has agreed to postpone, temporarily, decisions on several cases relating to conflicting claims asserted by members of the lathers and carpenters unions over acoustical ceiling work. Principal issue on which a statement of the Joint Board's position has been requested is whether the Taft-Hartley Act intends that the Joint Board rather than the NLRB be the final authority on jurisdictional disputes. In other words, should the NLRB itself undertake the task of deciding to which craft a disputed work assignment belongs if the Joint Board fails to win compliance with its procedure or its rulings?

• **Background**—Until now, the NLRB has taken the position that Congress so wrote the Taft-Hartley Act as "to afford the parties an opportunity to settle jurisdictional disputes among themselves without government intervention whenever possible." Two years ago, in the Lee case, it ruled that the Joint Board procedure is the type of voluntary settlement procedure the law contemplates and that when the disputing parties are subject to that procedure, the NLRB "is without authority to determine the dispute."

Despite the fact that it has refused to get into the merits of a dispute, however, the Labor Board has continued, in cases where the Joint Board procedure has broken down, to entertain and to rule on unfair labor practice complaints involving strikes aimed at forcing a contractor to award work to one craft instead of to another.

The continuing inability of the Joint Board to prevent jurisdictional strikes or to get compliance with its rulings has cast increasing doubt on the soundness of the NLRB approach. Most outspoken critic, has been the U. S. Circuit Court of Appeals for the Third Circuit, which held, four months ago in a Philadelphia dispute between riggers and pipefitters, that an NLRB ruling on the merits of a jurisdictional dispute is "obligatory" whenever such a dispute is referred to it.

Even members of the NLRB staff have begun to question the Lee approach. The trial examiner who handled one of the postponed cases—a carpenter-lather dispute in Cleveland—has taken the position that the NLRB has no authority to consider an unfair labor practice charge stemming from a jurisdictional dispute unless it holds a full-scale hearing on the dispute in what is called a Section 10(k) hearing.

• **Challenge**—The problem, says the NLRB, is "of transcendent national importance in the administration of the Labor-Management Relations Act."

At stake is the future of the Joint Board and the role of voluntary and private adjustment of disputes generally.

The challenge itself stems largely from the absence of any enforcement machinery in the Joint Board procedure, which is essentially a voluntary and contractural arrangement between participating unions and contractor groups. The agreement requires the submission of disputes to the Joint Board for determinations that are limited in their effectiveness to the job and the site where the disputes arose, and prohibits resort to work stoppages in a dispute. No penalties are imposed for non-compliance.

Two years ago, the AFL-CIO Building and Construction Trades Department attempted to make, over the objection of the lathers, the Joint Board procedure more effective by a constitutional amendment requiring all its affiliates to be bound by the Joint Board agreement. But this has not prevented occasional work stoppages or circumvention of either the Joint Board or its rulings. Through the process of unfair labor practice complaints, the NLRB has been able, perhaps illegally, to end some of the strikes, but it has never finally determined the merits of a dispute or allowed aggrieved crafts legal review of Joint Board determinations.

Significant in this respect is the criticism some of the unions—particularly the smaller ones—have heaped upon the Joint Board. An official of a Building Trades Council recently called the board the "biggest farce" ever to hit the construction industry. Some members of the board have been charged with insufficient practical knowledge and experience to decide disputes, and the board itself has been accused of favoritism toward financially strong unions, of violating its own procedural rules and of failure to follow the jurisdiction assigned the respective crafts by the old AFL and the AFL-CIO Building and Construction Trades Department.

• **Issue**—In re-examining the role it should play, the NLRB is primarily concerned with two provisions in the Taft-Hartley Act—Sections 8(b)(4)(d) and 10(k).

The first makes it an unfair labor practice for a union to strike in an effort to force an employer to assign disputed work to its members. The other directs the NLRB, whenever such an unfair labor practice charge is filed, to "hear and determine" the dispute unless the disputing parties have "adjusted" the dispute, or agreed "upon methods for the voluntary adjustment of the dispute."

What the NLRB is now being forced to decide is whether the mere existence of the Joint Board is enough, as it ruled in the Lee Case, to satisfy the law—that is, whether it justifies the NLRB's hands-off policy even though the Joint Board may actually fail to adjust the dispute.

By inviting the Joint Board to submit a brief on its position, the NLRB is asking the Joint Board to explain, among other things, its interpretation of two collateral provisions of the law apparently overlooked in the Lee case. Appearing in Section 10, which bears the general heading "Prevention of Unfair Labor Practices," these provide:

• That the power of the NLRB to prevent an unfair labor practice "shall not be affected by any other means of adjustment . . . established by agreement, law or otherwise."

• That the NLRB shall not dismiss an unfair labor practice charge unless it renders a decision, presumably on the merits of the dispute, and the decision is complied with, or unless the dispute is settled by "voluntary adjustment." Both provisions imply a settlement that is conclusive as well as final, whether achieved by the NLRB or by the Joint Board.

New York Strike Ebbs

Most settlements reached on three-year basis with immediate 15 cent boosts

A strike in the New York City construction industry entered its third week on Monday, July 15, but the number of participating unions had dwindled from three to one. Last week's settlements, nearly obscured by the critical effects of a nation-wide strike in the cement industry, were on a three-year basis, with steamfitters and riggers and machinery movers settling for an overall basic hourly rate boost of 55 cents, and ornamental ironworkers for a 50 cent increase spread over three years—plus various fringe benefit improvements in each case. Result in some respects is fairly close to the national pattern that's emerged so far this year, although the net result is higher.

The strike began following a June 30 expiration of contracts for 20 trades. Only three unions—sheet metal workers, steamfitteres and ornamental ironworkers—struck; no picket lines were established. As the week began, only the sheet metal workers were left on strike; boilermakers, plumbers, stone cutters and slate and tile roofers had no contracts, but still continued to work. The tally as of Monday: Fifteen of the building trades had settled—14 on the basis of three-year contracts, eight of which provide for an hourly increase of 65 cents in basic rates spread over a three-year period.

Effects of the strike were overshadowed by a still-unsettled, nation-wide cement industry strike that has snowballed into critical proportions (see page 138) and stalled work on a host of projects as cement supplies dwindled. Meanwhile, the industry faced a threat from another quarter. Sand, gravel and ready-mix concrete drivers in teamsters' Local 282 postponed until this week a decision on whether to strike suppliers. Last week, they turned down a two-year, 27½ cent plus fringe benefit offer.

• **Settlements**—The New York settlements, following pre-termination pacts with the glaziers and composition roofers on a three-year, 50 cent basis, were led off by six unions in the Concrete Alliance. Pattern they established—a 65 cent boost in basic rates payable in five installments over the contract term—was later accepted by asbestos workers and agreed to as a settlement formula by mason tenders.

Subsequent three-year settlements

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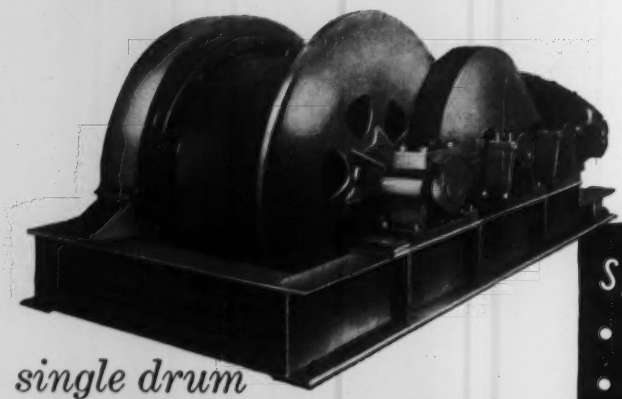

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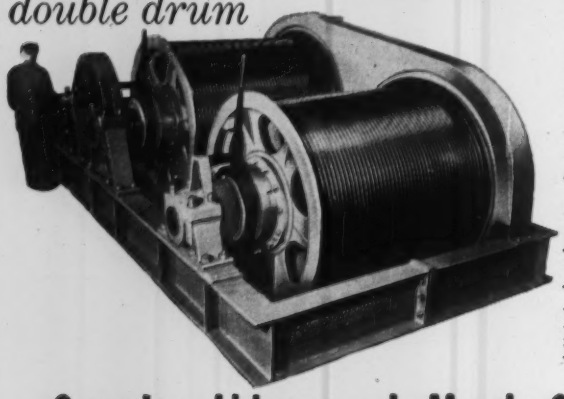

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with stone derrickmen, steamfitters, riggers and machinery movers, and ornamental ironworkers, and a two-year contract with stone setters, all called for less than the 65 cent pattern as far as basic rates are concerned, but each of the trades secured miscellaneous fringe benefit improvements, which resulted in putting the value of their total packages in some cases above that of the 65 cent settlements.

In all cases, present or future annual hourly wage increments (deferred increases) are either 15, 10, or 20 cents, the most common immediate increase being 15 cents. Ornamental ironworkers, for example, get 15 cents retroactive to July 1, followed by three subsequent increases of 10, 10 and 15 cents; unions that used the 65 cent pattern were granted 15 cents effective July 1, which is to be followed by four more boosts of 10, 10, 10 and 20 cents before the contracts expire in 1960.

This week, the sheet metal workers will vote to accept or reject a contractor offer of a three-year contract that would boost basic rates 75 cents over the contract period: 15 cents, July 1957; 10 cents, Jan. 1958; 10 cents, July 1958; 10 cents, Jan. 1959; 15 cents, July 1959, and 15 cents, Jan. 1960. Offer provides for no changes in fringe benefits, which now add up to 8% plus 20 cents an hour. Basic rate is now $3.75, making sheet metal workers' present pay $4.25 an hour when fringe benefits are added.

• **Comparison**—The amount of the installments in which the New York wage boosts are payable follow the national pattern so far established this year, but in most cases the net result is higher because of the greater frequency of installments.

According to the Bureau of National Affairs, hourly wage gains won by the building trades in the first six months of 1957 have averaged 15.4 cents. Most popular settlement figures were 15, 12½ and 20 cents, in that order. In long-term contracts, common amounts for deferred increases in 1958 and 1959 are 10, 12½, 15 and 20 cents, a fact, BNA observes, that will perpetuate the 1957 pattern for some time.

Largest gains for this year were negotiated on the West Coast (an average of 18.7 cents) and the lowest in the South (13.8 cents); average for the northeastern states was 15.8 cents. Trade-wise, biggest average hourly increases were won by the sheet metal workers (17.5 cents), bricklayers (16.7 cents), ironworkers and roofers (16.4 cents each) and the plumbling trades (16.3 cents).

Figures are based on BNA's analysis

of the 1957 construction industry settlements reported during the first six months of this year in its weekly publication, "Construction Labor Report."

Secondary Boycotts

Labor Board broadens its jurisdictional standards

The National Labor Relations Board last month announced a new formula for determining the extent to which it will become involved in secondary boycotts. Representing a change in its jurisdictional standards, the board will now take a look at interstate commerce activities of all secondary employers affected by a boycott, and, if the activities of one or more add up to the required dollar amount of interstate activity, the protection of the law will be extended to all the secondary employers.

Result is to allow employers that couldn't otherwise qualify for NLRB relief to ride along on the coattails of others, and to whittle down the "no-man's land" that the board's jurisdictional standards have created.

The new rule was handed down in a case stemming from a boycott against several Cleveland supply firms. Reason for the boycott was that the firms were dealing with the primary employer with whom the unions were engaged in a labor dispute.

A strong dissent to the new rule was filed by board member Abe Murdock, who said the new approach takes the board into areas beyond the labor dispute and gives employers greater protection from unfair labor practices than is now accorded employees.

The NLRB jurisdictional standards are a device by which the board controls the volume of its case load. What the board has done is to limit NLRB activity to those disputes that materially affect interstate commerce, which it has chosen to measure in dollar volume. Interstate commerce employers that don't meet the dollar minimum can't go before the board, and find themselves in a "no-man's land" —because under the doctrine of federal supremacy they are also barred from state courts.

The new jurisdictional rule is a radical departure from the earlier one established in the Jamestown Builders' Exchange case, where the board consented to include in its measuring formula only that portion of an employer's interstate activities affected by the boycott. Later, the rule was broadened in the McAllister case to include all operations of secondary employers at the business site where the boycott occurs.

In adopting the new rule, the board proceeded on the theory it should give the "broadest scope" to those remedial provisions in the law designed to protect innocent third parties who become victims of a secondary boycott.

Labor Briefs . . .

• **Convention**—The AFL-CIO Building and Construction Trades Department will hold a special convention in Atlantic City, N. Y., on Aug. 5 to consider changes in its constitution. Main purpose is to bring it in line with the AFL-CIO constitution, but some changes may also be made in provisions relating to the National Joint Board for the Settlement of Jurisdictional Disputes.

• **No regulation?**—The New York State Department of Labor has reported that 70% of all workers in the state are under single-employer welfare and pension plans, most of which are run by employers alone. Assets exceed $14 billion. Employer groups have been asking Congress to exempt such plans from regulation as unnecessary.

• **Association bargaining**—Following a temporary injunction issued pending an NLRB investigation, teamsters returned to work on guided missile construction projects at Patrick Air Force Base in Florida. Union had been on strike for 25 days to enforce its demand that bargaining be conducted with individual contractors and not with the Patrick Air Force Base Contractors Assn.

• **Lower rates**—Effective this month, Kentucky workmen's compensation insurance rates were decreased by an average of 6.7%. Most industries, including construction, were affected. Cut for contractors was 2%.

• **Scholarship**—The Southern Illinois Lathing and Plastering Industry Commission will award a $2,500 scholarship this summer for the study of architecture at the University of Illinois. Formed by lathing and plastering unions and contractors, the commission seeks to promote the interests of their industries and the public.

• **Jurisdiction**—Work has been resumed on Ice Harbor Dam near Pasco, Wash., following settlement in favor of carpenters of a dispute between iron workers and carpenters over formwork. Craft had been idle nearly two weeks.

• **To appeal**—In a $248,127 damage suit filed by Morrison-Knudsen Co., a federal court has held that a 1956 strike by teamsters and operating engineers at the AEC Hanford Works in Richland, Wash., was a breach of contract containing a non-strike clause. Damages have not been determined.

OFFICIAL PROPOSALS

Bids: July 30, 1957

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Bids will be received for four (4) lengths approximately 9,000 feet each of single conductor hollow-core 115 kv self-contained, low pressure oil-filled submarine cable for direct burial, with appurtenances, for one (1) three phase circuit and one (1) spare conductor and services in accordance with the bidding schedule. Installation will be done by Others, but services of erection engineers shall be provided by the manufacturer, if and when required. Delivery will be required starting May 1, 1958.

Plans, Specifications and Proposal Forms may be obtained only from the Power Authority of the State of New York at their offices, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten ($10.00) Dollars for initial set of Contract Documents and Five ($5.00) Dollars for each additional set, no part of which will be refunded. Two sets must be returned with each bid.

Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the office of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10 Massachusetts, for inspection by prospective bidders.

Bids will not be restricted to American manufacturers.

Bids must be made in duplicate in accordance with the instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than ten per cent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

PA-6-43

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-4939) will be received at Denver, Colorado, until August 22, 1957, for furnishing chlorination equipment, suitable for flow variations of 225- to 53,100 gpm at two stations, 260- to 10,800 gpm at one station, and 1,440- to 4,320 gpm at one station, with dosages at all stations varying from 1 to 2 gpm for Ventura River Project, California. Delivery is desired within 270 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4938) will be received at Helena, Montana until August 15, 1957, for furnishing labor and materials for earthwork and structures for Helena Valley Canal, Station 626+63 to Station 1842+69, Helena—Great Falls Division, Montana, Missouri River Basin Project. Location near Helena, Montana. Principal items are 506,000 cu. yds. excavation; 113,000 cu. yds. earth lining for canal; 2,800 cu. yds. concrete; 4,400 lin. ft. concrete culvert pipe, 18- to 60-inch; and other work. Completion time 560 days. For particulars, address Bureau of Reclamation, P. O. Box 551, Helena, Montana; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

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SEND COPY TO: Official Proposal Division, Engineering News-Record, P.O. Box 12, New York 36, N. Y.

Bids: August 2, 1957.

Pennsylvania Railroad Company

Strengthening, Widening and Reconstruction of Bridge .

Sealed Proposals for the strengthening, widening and reconstruction of Overhead Bridge No. 59.39, carrying Washington Road over tracks at Sayreville, N. J. will be received by The Pennsylvania Railroad at the office of Assistant Chief Engineer-Construction, 1640 Transportation Center, Six Penn Center Plaza, Philadelphia 4, Pa., until 10:00 A. M., D. S. T., on August 2, 1957, at which time and place they will be publicly opened and read.

This project is being constructed under an Order of the Board of Public Utility Commissioners of New Jersey.

The contract documents, including plans and specifications, may be examined and obtained at the above-named office upon deposit of $10.00 per set, which will be refunded upon return of the Documents in good order within twenty days after date on which bids are received.

Each Proposal must be accompanied by a certified check of the Bidder, payable to The Pennsylvania Railroad Company in an amount not less than 5% of the total price stated in the Proposal.

Proposals must be submitted in a sealed envelope marked—Sayreville, N. J.—Overhead Bridge 59.39.

The right is reserved to reject any or all bids.

The Pennsylvania Railroad Company
J. F. Piper—
Assistant Chief Engineer-Construction

Bids: July 30, 1957

Contract O & M—443 Proposal No. 1094

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
SEAL COAT TREATMENT

Sealed proposals for furnishing all labor, material and equipment for furnishing and applying sealcoating on the shoulders of runway 4-22 and taxiway E at New York International Airport will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, until 11:00 A.M., Tuesday, July 30, 1957, at which time and place said proposals will be opened and read.

Contract documents may be obtained upon request at the office of the Department of Purchase and Administrative Services, Room 900, 111-8th Avenue, New York 11, N. Y.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, July 17, 1957

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4933) will be received at Kanab, Utah, until August 13, 1957, for furnishing labor and materials for Water Supply System for Page, Arizona, Glen Canyon Unit, Arizona-Utah, Middle River Division, Colorado River Storage Project. Location approximately 15 miles upstream from Lees Ferry, Arizona. Principal items are 49,850 cu. yds. excavation; 1,500 barrels, furnishing and handling cement; lump sum, constructing filtration plant superstructure; lump sum, constructing high lift pumping plant; 50,000 pounds, furnishing and installing cast-iron flanged water pipe and fittings; and other work. Completion time 440 days. For particulars, address Bureau of Reclamation, P.O. Box 360, Salt Lake City 10, Utah; P.O. Box 267, Kanab, Utah; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

Bids: July 26, 1957

Construction of Sanitary Sewers

Sealed bids will be received until 11:00 A.M., EST, on July 26, 1957, in the office of the City Commission of Fort Lauderdale, Florida, for the construction of sanitary sewers in Area "D" consisting of approximately 54,000 linear feet of gravity sewers, 69,000 linear feet of air and force mains, 22 pneumatic ejector lift stations and appurtenances. This contract to be known as "Contract A-7, Improvement 1000."

Bidding blanks may be obtained from the office of the City Engineer. Plans, specifications, and contract documents are on file in the office of the City Engineer.

A deposit of $50.00 for plans and specifications, and of $35.00 for each additional set of plans or specifications, will be required. All deposits for plans and specifications will be refunded upon their return in good condition within 10 days of the opening of bids.

A certified check, cashier's check or bank officer's check, for 2% of the total amount of the bid, made payable to City of Fort Lauderdale, Florida, shall accompany each proposal as evidence of good faith and responsibility of the Bidder. This check shall be retained by the payee as liquidated damages should the Bidder refuse or fail to enter into a contract with the payee for the execution of the work embraced in the Proposal, in the event the Proposal of the Bidder is accepted.

The City Commission reserves the right to reject any or all bids.

William J. Veeder
City Manager

Bids: August 8, 1957

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
FOR REFORESTATION WORK
DURING 1957 AND 1958
IN CONSTRUCTION AREAS
AND STATE PARK
ST. LAWRENCE COUNTY, NEW YORK
SPECIFICATIONS NO. PA-5-11028
ST. LAWRENCE CONTRACT NO. 36

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for Reforestation Work during 1957 and 1958 in Construction Areas and State Park, St. Lawrence County, New York, until 10:30 A.M., Eastern Daylight Saving Time, on the 8th day of August, 1957, at the Authority's office, 18th floor, the Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The estimated quantities of work are:

Furnishing and planting—
34,160 deciduous trees
Planting—263,035 evergreen seedlings

All of the reforestation work shall be completed on or before June 15, 1958.

Plans, Specifications and Proposal Forms for the work, may be obtained from the Power Authority of the State of New York, at 18th Floor, the Coliseum Tower, 10 Columbus Circle, New York 19, New York upon application and prepayment of a fee of Ten ($10.00) dollars per initial set of contract documents, and Five($5.00) dollars per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and The Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, and may be inspected by prospective bidders during office hours.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 10 percent of the maximum price bid for any bid schedule.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

PA-5-11028

Sealed bids will be received in the office of the Engineering and Construction Director, Panama Canal Company, Balboa Heights, Canal Zone, until 10:00 A.M., E.S.T., September 13, 1957, and at that time will be publicly opened, for the following: Furnishing all plant, labor, materials, equipment, and services and performing all work to convert domestic, commercial, and industrial equipment in the Miraflores and West Bank area of the Panama Canal Zone, which includes Pedro Miguel, Miraflores Filtration and Pumping Plant, Palo Seco, but does not include the Miraflores or Pedro Miguel Locks. Bid data, specifications, and drawings are available for examination in the office of Chief, Procurement Division, 21 West St., New York 6, N. Y. Sets of data may be obtained from this office upon payment of $25 deposit which will be refunded if data is returned within 40 calendar days after the bid opening.

Department of Commerce, Bureau of Public Roads, July 8, 1957. SEALED BIDS will be received at the office of the Bureau of Public Roads, First National Bank Building, Florence, Alabama, until 10:00 a.m., C.S.T., AUGUST 9, 1957, for the construction of Project 3D14, 19, Natchez Trace Parkway, Lee County, Mississippi. One Reinforced Concrete Slab Bridge and One Steel I-Beam Bridge over old and new channels of Old Town Creek, together with approaches. Aggregate length 0.123 mi. The approximate quantities of the more important items are as follows: 14,700 cu. yd. Excavation and Borrow, 1,720 cu. yd. Concrete, 195,500 lb. Reinforcement Steel, 226,000 lb. Structural Steel, and 25,800 lin. ft. Untreated Timber Piles. Minimum wage rates have been fixed as required by law. Plans, specifications and proposal forms are available upon request at the address given above, or Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia. H. J. Speiman, Regional Engineer.

Engineering News-Record

Reaches Your Local Contractors

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OFFICIAL PROPOSALS

Bids: August 8, 1957

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Canal Law, Public Buildings Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 8th day of August, 1957, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. Nickerson, District Engineer, 353 Broadway, Albany, N. Y.						
Albany & Greene	R.C.57-127	Br. No. 4, S.H.364; Br. No. 1, S.H. 8388; Br. No. 3, S.H. 1220; Br. No. 1, S.H. 5370; Br. No. 5, S.H. 997; Br. No. 1, S.H. 998; Br. No. 5, S.H. 1774B; Br. No. 1, S.H. 1774 and Br. No. 2, S.H. 1774	....	Cleaning and Painting 9 Bridges	$600 Plans $10	$11,000
Greene (Rte. 81)	R.C. 57-128	Cooksburg-Greenville Pts. 2 & 3, S.H. 8197	5.87	Asphalt Concrete	$12,000 Plans $10	220,000
Greene (Rte. 385)	R.C. 57-129	Catskill Village, Bridge No. 1, S.H. 5716	0.10	Reconstruction of Abutments, Wingwalls, Sidewalks, Etc. on Exist. Bridge	$1,200 Plans $10	23,000
DISTRICT No. 2, Lacy Ketchum, District Engineer, 109 No. Genesee St., Utica, N. Y.						
Herkimer (Rtes. 5 & 167)	FAC 57-8 FARC57-137	City of Little Falls: Route 167 Arterial, Easterly Section Little Falls-Dolgeville, S.H. 133 Project U-F-584(3)	0.60 (0.06) (Int.)	Asphalt Concrete, Ty. 1A	$11,000 Plans $10	210,000
Montgomery	C.R. 57-2	City of Amsterdam: Rte. 5S Arterial Connection, FAC 55-8	....	Removal of Human Remains	$1,200 Plans $10	22,000
Montgomery & Oneida	M 57-15	Erie Canal Bridges at Randall, Utica, Whitesboro; Rome and New London	....	Cleaning and Painting 5 Bridges	$1,600 Plans $10	30,000
Montgomery & Oneida	M 57-10	Barge Canal Terminal at Utica Barge Canal Terminal at Fonda	0.44	Wire Mesh Fencing and Gates	$400 Plans $10	8,000
Oneida (Rte. 8)	FARC 57-138	Utica-Bridgewater, S.H. 559 Clayville Village, S.H. 5079 Project F-522(2)	1.71 (0.51) (Int.)	Asphalt Concrete	$24,000 Plans $15	445,000
Oneida (Rte. 49)	FARC 57-139	Vienna-New London, S.H. 1159 Project F-U-624(5)	0.57	Asphalt Concrete Prestress. Conc. Beam Br. 251.8'	$22,000 Plans $10	406,000
DISTRICT No. 3, Wm. Robinson, District Engineer, Weigh Lock Bldg., Syracuse, N. Y.						
Cayuga & Seneca (Rte. 31&89)	R.C. 57-140	Br. No. 3, Canoga-Halsey Corners, S.H. 8363 Br. No. 1, Montezuma-Port Byron, S.H. 5610	....	Cleaning and Painting 2 Bridges	$700 Plans $10	12,000
Cayuga & Wayne (Rte. 370 & 104)	FARC 57-130 FASH 57-14 FASH 57-15	Wolcott-Red Creek, S.H. 5290; Victory-Red Creek Pt. 1, S.H. 8048; S.H. 5290-Westbury and Westbury-S.H. 8048 Proj. F-114(2)	5.39	9" Cem. Conc. Pavt. 24-48' Wide = 5.25 Mi. Misc. Work = 0.14 Mi.	$60,000 Plans $15	1,102,000
DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester, N. Y.						
Monroe	Losp 57-2	Lake Ontario State Parkway, Sects. B-C-D and East Monitou Rd.	9.20	Roadside Development	$7,000 Plans $25	131,000
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, 65 Court St., Buffalo, N. Y.						
Chautauqua & Erie (Rte. 5)	R.C. 57-132	Southwestern Boulevard, S.H. 1852 (Br. No. 1)	....	Cleaning and Painting 1 Bridge	$1200 Plans $10	23,000
Niagara	M 57-12	Erie Canal Bridges at Vernon St.; and Main St., Middleport; C.R. 94 and Gasport	....	Cleaning and Painting 4 Bridges	$800 Plans $10	15,000
DISTRICT No. 6, J. H. Thomas, District Engineer, 30 West Main St., Hornell, N. Y.						
Steuben (Rte. 17)	FARC 57-131	Big Flats Gibson, S.H. 742 East Corning-Horseheads, Pt. 1, Fash 55-5 Project F-661(7)	0.62 (0.84) (Acc.)	9" Cem. Conc. Pavt. 24' Wide = 0.26 Mi. Asph. Conc., Opt. = 1.11 Mi. Misc. Work = 0.09 Mi. Hy. Sep. Comp. I-Beam 189.8'	$22,000 Plans $15	405,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Duzee St., Watertown, N. Y.						
Jefferson (Rte.3)	FARC 57-133	Carthage Village: State and School Sts. and West End Ave., S.H. 5344 Carthage-Wilna, S.H. 624 Fargo-Natural Bridge, S.H. 8190 Project F-273(4)	4.11	Asph. Conc. = 4.10 Mi. Misc. Work = 0.01 Mi.	$78,000 Plans $15	1,424,000
St. Lawrence, New York & Grenville, Ontario, Can.	OBA 57-2	Ogdensburg Bridge, Cont. No. 2	....	Bridge Substructure (Piers C1 to C14 and U1 to U13 Incl.)	$166,000 Plans $15	3,015,000
DISTRICT No. 8, K. G. Rauer, District Engineer, Pleasant Valley, Poughkeepsie, N. Y.						
Ulster (Rte. 213)	FARC 57-134	Kingston-Rifton, S.H. 116 Eddyville Bridge, S.H. 5192 Project US-485(1)	0.38	9" Cem. Conc. Pavt. 24' Wide = 0.34 Mi. Asph. Conc. = 0.04 Mi. Hinged Steel Arch Br. 340'	$40,000 Plans $15	738,000
Westchester & Bronx	BRP 57-1 CCP 57-1	Bronx River Parkway (Lower Section) Part 1 and Part 2 Cross County Parkway	3.02	Roadside Development	$10,000 Plans $15	192,000
Delaware (Rte. 28&30)	FARC 57-80 R.C. 57-81	Andes-Margaretville, S.H. 8017 Margaretville-Halcottsville, S.H. 5384 Project S-459(1)	0.48	9" Cem. Conc. Pavt. 22'-40' Wide = 0.36 Mi. Asph. Conc., Opt. = 0.09 Mi. Misc. Work = 0.03 Mi.	$11,000 Plans $10	210,000
Delaware & Schoharie (Rte. 23)	R.C. 57-135	Grand Gorge-Stamford-Harpersfield, S.H. 5343	5.88	Asphalt Concrete	$30,000 Plans $10	545,000
Otsego (Rte. 7)	FARC 57-121	Wells Bridge-Otsego, S.H. 5153 Project F-628(6)	3.53	Asphalt Concrete Widen Exist. R.C. Beam Br. 30' Widen Exist. R.C. Beam Br. 36'	$35,000 Plans $15	613,000
DISTRICT No. 10, M. E. Goul, District Engineer, Little East Neck Rd., Babylon, L. I., N. Y.						
Nassau (Rte. 25D)	FAHHE 57-2	Horace Harding Expressway Extension Cont. #4 (Willis Ave. to Guinea Woods Rd.) Project U-862(13)	5.83 (5.50) (Acc.)	9" Cem. Conc. Pavt. (Carbon Black) 266.34' Var. Wide = 1.82 Mi. 9" Cem. Conc. Pavt. Var. Wide = 2.16 Mi. Asph. Conc., Opt. = 2.86 Mi. Misc. Work = 4.49 Mi. 2 Hy. Seps. R.C. Rigid Frames 87.1' and 44.6' 5 Hy. Seps. Comp. Steel Girders 80.8', 273.5', 182.3' 137.5' and 186'	$295,000 Plans $100	5,355,000
Suffolk	SMSP 57-1	Sunken Meadow Spur Parkway, Cont. 8	7.07	Planting and Seeding	$11,000 Plans $15	202,000
Suffolk (Rte 27)	R.C. 57-136	Westhampton-Quogue, S.H. 1571 Br. No. 138 Patchogue-Moriches, S.H. 5488 Br. No. 134	....	Cleaning and Painting 2 Bridges	$450 Plans $10	8,000
Suffolk	B.P. 57-65	Point O'Woods and Ocean Bay Park	1.42	Hydraulic Fill (Beach Protection	$5,000 Plans $10	97,500

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wages, Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

Re: O.B.A. 57-2, St. Lawrence County, N. Y., and Greenville, Ontario, Canada: Maps, plans, specifications and proposals may be seen and obtained at the offices of Dr. P. L. Pratley, 909 Drummond Building, Montreal, Canada, and at Modjeska and Masters, Forster at 6th Street, Harrisburg, Pa.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders."

The right is reserved to reject any or all bids.

JOHN J. JOHNSON
SUPT. OF PUBLIC WORKS

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College Graduate for 5,000 population southern New Hampshire community, salary open. Send detailed resume to:

P-5565, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

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NEW YORK: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Gunite Superintendent—Wanted immediately. Middle Atlantic States. State age, experience, availability, salary desired. P-4640, Engineering News-Record.

Engineer-Gunite, wanted immediately, must know estimating, take complete charge of all gunite operations. Executive position ultimately available. P-5355, Engineering News-Record.

Civil Engineer, recent graduate, for work with County Public Works Department. Work will include design of storm drainage systems, roads and streets, shore erosion control, culverts and small bridges. Fringe benefits. Salary commensurate with experience. Write Director of Public Works, Post Office Box 506, Annapolis, Maryland.

Instructors for civil engineering department starting September 1, 1957; bachelor's degree preferred, so that specialization may fit instructor and departmental needs. Salary $4050 for nine months. Extra work for consultants permitted and encouraged. Graduate courses may be taken. Location, Mississippi. P-5495, Engineering News-Record.

Excellent opportunity in Consulting Engineer's office for competent engineer experienced in design and inspection of water and sewage systems, water and sewage treatment plants, estimates, reports. State education, age, experience, salary required and when could report. Correspondence confidential. P-5461, Engineering News-Record.

Wanted—Experienced concrete paving super-intendent for work in Kansas and surrounding area with Wichita, Kansas headquarters. Martin K. Eby Construction Co. Inc., P. O. Box 1679, Wichita, Kansas.

Inspectors—Concrete, Soils & Asphalt, Lab & Field. For Overseas Airbase Construction. Temperate Climate. Please send detailed resume. P-5483, Engineering News-Record.

Field Engineer—Cement Company, Location —New Jersey Area, C E Graduate required, Age—25 to 35, Travel to adjoining states on alternate weeks. Remarkable opportunity with progressive company. P-5542, Engineering News-Record.

Architectural Engineer—with at least 8 to 10 years experience in steel and concrete. Permanent position—associateship possibilities with other if ability proven. Work includes churches, schools and commercial buildings. Air-conditioned offices. Hospitalization and other benefits. Central Pennsylvania architect. Please send resume of education and experience, stating salary requirements and availability, also snapshot and references. P-5527, Engineering News-Record.

Superintendent—$8,000.00 salary, plus percentage of profits. Permanent position with midwest contractor doing Sewerage and Water Treatment Plants and main work. State age, availability, experience, and references. Right man can go to work immediately. P-5447, Engineering News-Record.

Sales Engineer-Estimator for structural steel and miscellaneous iron fabricator. Degree in architectural or civil engineering desirable. State experience, education, age, salary requirements and enclose snapshot with first letter to Southern Iron Works, Inc., P. O. Box 430, Alexandria, Va.

POSITIONS VACANT

Railroad Representative-Structural Engineer with experience in B & B department for educational work with railroads. Age 30 to 40. Headquarters Chicago. Portland Cement Association, 33 West Grand Avenue, Chicago 10, Illinois.

Instructors or Assistant Professors for Civil Engineering Department. Master's degree and teaching or practical experience desirable. Preferably to teach courses in Highway Engineering and/or Surveying. One or two positions open starting in September 1957. Nine month year; salaries dependant on education and experience. Civil Engineering Department, University of Nevada, Reno, Nevada.

Wanted—Experienced Designers on Highways and Bridges. Locations Philadelphia and Harrisburg, Pa. and Columbus, Ohio. Long range work program. Good opportunities to qualified applicants. Reply stating experience, availability and salary requirements. P-5553, Engineering News-Record.

Civil Engineers to work with consulting engineering firm. Long established municipal consulting firm desires to secure graduate civil engineers for permanent positions. Experience in water and sanitation required. Offices located in very desirable small college community in Colorado area. Expansion of firms operations provide unlimited opportunities for advancement for properly qualified engineers. Firm desires to employ engineers with from one to fifteen years of experience. Salaries $5,100 to $6,600. Civil engineers with masters degree in sanitary engineering or masters degree in structural design also required. Salary commensurate with experience. Please give experience and full details in reply, including transcript of post-graduate work. Replies will be held confidential if requested. P-5570, Engineering News-Record.

Construction Company in Springfield, Missouri, has an immediate opening for an experienced estimator. Principally engaged in earth-moving, sewers, and asphalt paving. Send resume and salary requirements. P-5574, Engineering News-Record.

Structural Designers: Permanent positions in office of consulting engineer firm for experienced designers of bridges and buildings. Engineering graduates designers of bridges and buildings. Engineering graduates with a minimum of four years design experience. Salary commensurate with ability and experience. 40 hour week, air-conditioned office, attractive employee benefits. Green Associates, Inc., 220 East Pleasant Street, Baltimore 2, Maryland.

Electrical Engineers: Consulting engineer firm has opening for engineers experienced in the design of lighting and power distribution systems for buildings. Engineering graduates with minimum of four years design experience. Salary commensurate with ability and experience. 40 hour week, air-conditioned office and attractive employee benefits. Green Associates, Inc., 220 East Pleasant Street, Balimore 2, Maryland.

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POSITIONS WANTED

Construction or Project Manager, capable executive. 27 years experience from field superintendent to Foreign Resident Manager. All types multi-million dollar construction, foreign and domestic. Contract negotiations, estimating, purchasing, labor and public relations. Spanish, German, French Portuguese. Seeking a permanent assignment but would consider challenging term contract in Europe, Latin-America or USA. PW-5275, Engineering News-Record.

POSITIONS WANTED

C. E., 7 yrs. heavy and building construction experience. Field and office engineering. Estimating experience, handle bids, architects, all trades. Construction in permanent location or Plant Engineering. PW-5457, Engineering News-Record.

Heavy Construction Business & Office Manager, seeking position with growing concern. Experienced in all types of office work; public relations; Banking & Bonding Co. connections. Complete resume upon request. PW-5516, Engineering News-Record.

Project Manager, age 40, for commercial or industrial construction. Background with architects owners contractors will accept transfer. $14,000. Available July 30, 1957. PW-5416, Engineering News-Record.

Structural Engineer—Registered—27 years broad experience best references. Seeks position in Florida. PW-5425, Engineering News-Record.

Civil Engineer, age 33, B.S.C.E. Ten years experience that includes office procedure, drafting, surveying, building construction, electrical distribution and steel design. Available at present. Desire a permanent position in construction engineering with responsability, and future possibilities. Excellent references. Resume upon request. Preferable location—Northeast U. S. section. PW-5600, Engineering News-Record.

Construction Engineer, Civil, retirement age, experienced field and office, industrial plants and buildings, public buildings, housing, reinforced concrete, specifications, estimates, supervision; wants position along lines of experience. B. F. Baker, 280 Bronxville Road, Bronxville, N. Y.

Structural Engineer; BSCE; 28. Two years responsible design experience in bridges and buildings, concrete and steel. Also construction and business background. Desires office or field job. PW-5601, Engineering News-Record.

Associate Prof. Civil & Structural, MSCE, in 1958 D.Sc. 5 yr teaching, 14 yr engineering exp. Prefer East, PW-5603, Engineering News-Record.

C.E. Reg. Pa. and N. J. Desire position as assistant to Consulting Eng. or Contractor. Experience in Sub-division and Shopping Center site planning. PW-5564, Engineering News-Record.

Swiss Civil Engineer, 30, Reg. P. Eng., 6 yrs. experience, 3 years in North America. Design and construction of bridges, Hydro projects, buildings. English, French, German fluently. Desires responsible position overseas or U. S. PW-5560, Engineering News-Record.

C.E. age 38, 15 yrs. heavy constr. and building exp., design and constr., desires overseas position preferably in Europe. Previous ext. European experience. PW-5546, Engineering News-Record.

Civil Engineer, City Manager, Registered P.E. & L.S. BSCE. Background in heavy construction supervision, engineering and materials (solids, asphalt, and concrete), municipal engineering and administration, (power plant, water systems etc.). Desires position foreign with family housing or domestic in Middle West or West. PW-5556, Engineering News-Record.

Young Engineer desires position in construction, will grad. BSCE August, begin work Sept. 4. Summers experience in highway construction and surveying, 1956 party chief, Alaska. PW-5554, Engineering News-Record.

Structural Engineer: M./S. 5 years experience with a major American Oil Co. overseas. Familiar with planning, supervision of design, procurement of materials, and construction of industrial and oil facilities. 28, single. PW-5555, Engineering News-Record.

CONTRACT WORK WANTED

Structural Engineering Firm, extensive experience in design of highway and railroad bridges, presently available, reputable, licensed. CWW-5510, Engineering News-Record.

$7,000 to $10,000

for experienced PE to be Village Engineer in prosperous upstate New York village of 6,500 people. Salary will depend on qualifications. Village Engineer is responsible for planning, design and execution of public works dealing with streets, sanitation and storm drainage. Also he is engineering consultant to Water & Light Dept. Send resume to Mayor, Wellsville, N. Y.

DESIGNERS and DETAILERS

Experienced in the design or detailing of Erection Methods for Bridges and Structures. Write stating age, education and exper. Engineering office located New York City. Reply:

P-5579, Engineering News-Record,
Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

CONSTRUCTION SUPERVISORS

Supervisory personnel with experience in responsible supervision and inspection of concrete and earthwork construction to serve as Construction Supervisors on Dams and Flood Control projects in Pennsylvania. Engineering degree not required.

Salary open. Send resume of experience, salary requirements and references to:

P-5583, Engineering News-Record,
Class. Adv. Div., P.O. Box 12, New York 36, N. Y.

RESIDENT ENGINEERS

Graduate Civil Engineers with experience in concrete and earthwork construction to serve as Resident Engineers on Dams and Flood Control projects in Pennsylvania. Design Engineers with related experience are also desired.

Salary open. Send resume showing experience, salary requirements and references to:

P-5586, Engineering News-Record,
Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

STRUCTURAL ENGINEERS

Large architectural engineering firm in Dallas, Texas, with highly diversified practice, needs structural engineers with building design experience. Permanent positions. Write George L. Dahl Architects & Engineers, 2101 North St. Paul Street, Dallas, 1, Texas. State qualifications, experience record and minimum salary expected.

HIGHWAY & BRIDGE ENGINEERS

Well established Consulting Engineer has immediate openings for engineers experienced in Highway and Bridge design and construction. Permanent positions. Liberal Employee benefits. Salaries commensurate with education and experience. Send complete resume including salary requirements and availability.

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ENGINEER
333 Front Street Binghamton, New York

HIGHWAY ENGINEERS

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HARZA ENGINEERING CO.
400 W. Madison St. **Chicago 6, Ill.**

CIVIL ENGINEER

Young civil engineer interested in broad application of civil engineering.

Excellent opportunity with consulting firm. Liberal benefit plans and good working conditions. Location Middle West.

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P-5223, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

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Excellent opportunities for experienced men having ability to produce professional work on schedule. Employee benefits. Salaries commensurate with qualifications. Please send detailed educational and experience resume plus availability.

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227 Pine St. **Harrisburg, Pa.**

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To supervise construction estimating group engaged in computing complete costs for erecting chemical process plants. Experience in supervision and estimating in same or closely related field required. Replies treated in confidence. Our employees are aware of this ad. Send replies to

P-5572, Engineering News-Record,
520 N. Michigan Ave., Chicago 11, Ill.

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FOREIGN POSITION

American Chief Engineer qualified to direct and expand existing highway organization required in Near East Country. Extensive highway development program involved. Unusual long term opportunity. Submit detailed personal history and experience record. Initial inquiries will be treated confidentially.

P-5523 Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N. Y.

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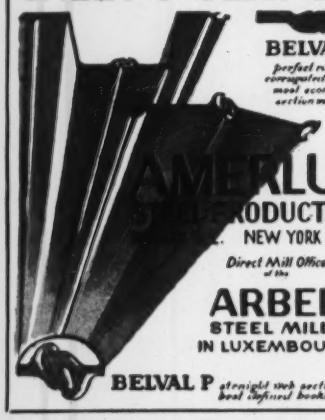

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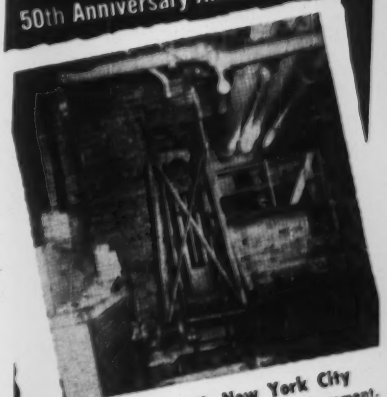

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Editorials

Protection Not Feasible

HURRICANE AUDREY'S TOLL OF LIVES in Cameron, La., and the other nearby shrimp fishing villages along the Gulf Coast was not the result of the failure of any engineering structure. Nor can the disaster be attributed to any lack of engineering foresight. There were no protective works to fail, and the cost of providing them could hardly have been justified.

Each such damaging Gulf Coast storm inevitably recalls the sea waves that, in 1900, engulfed the city of Galveston, all but destroying it physically and taking 5,000 lives. A part of the recollection is also the fact that the city was rebuilt behind a 5 mile long, 21 ft seawall, and a large part of its area raised to that elevation from the 6 ft or less that prevailed in the original town. Two equally great storms, in 1915 and 1919, have since failed to top or breach these protective works. Galveston, thanks to engineering skill, can thus feel reasonably secure when hurricane warnings are broadcast.

But what is possible for Galveston, a large city and an important port, is out of the question for Cameron. Perhaps some modest protection can be provided, but in the main, shrimp fishing must remain the dangerous business that Hurricane Audrey proved it to be.

Behind Every Good Man—

ENGINEERS MAKE GOOD HUSBANDS. This was concluded from a study of Illinois Institute of Technology graduates, among whom the divorce rate was found to be far below the national average. Researchers credited the high level of security among engineers—absence of friction over money matters—as a prime reason. That was three years ago.

Much earlier, engineers were found to make good husbands by a strictly qualitative analysis of an engineer's wife. Her candid observations were published by ENGINEERING NEWS-RECORD and titled "—And Far Away". That was 30 years ago.

It is interesting to consider one obvious difference in the reasoning between two similar conclusions reached 27 years apart. Our anonymous lady author of the Twenties (ENR Mar. 31, 1927, vol. p. 511) extolled the intense interest, variety, hardships and adventure of her husband's chosen field, claiming the engineer's wife "must have a blue-steel soul and India-rubber disposition," but never once mentioning money. Yet, the researchers of more recent days find security the engineer's first saving grace as a mate.

And now, a rash of letters from wives of engineers would indicate that today the money paid their husbands is not always what they consider it should be. The most recent of these, a telling argument against apathy in the face of the need for further professional upgrading, appears in the Reader Comment on page 10 in this issue.

If the nature of things has not changed considerably in 30 years and engineers' wives still need an "India-rubber disposition" to share fully as they do in the professional lives of their husbands; and if, despite present-day security, there remain money problems that might well cause marital friction; and if, both these things being true, the researchers continue to see engineers' marriages holding up; then, we must conclude the obvious:

Engineers, in truth, can be a serious, if not dull lot, absorbed in their work often to the extent of inconvenience, if not hardship, to their families. Financially secure as they may be in this present day-and-age, they do —as the lady says—"place too low a value on their works." In short, engineers do not necessarily make good husbands; they are just made to look good by somehow having chosen good wives.

Growing Pains

ON THE THEORY that too much satisfaction with progress is a temptation to complacence, it is well now and then to reflect on some of the problems that this progress is creating. Three news items of recent date can readily provide a whole evening's reflection.

In New York, necessary street repair and paving creates such alarming traffic snarls that the work should be done at night. But it isn't because night work keeps nearby residents awake, requires union permission for the men to work and makes double-time pay necessary.

In St. Louis, Mayor Raymond R. Tucker is wrestling with the problem of new communities outside the city's jurisdiction, where homes are going up next to areas destined for factories or in areas devoid of good drainage possibilities or lacking in transportation facilities. Without cooperation between city and suburb, he sees slum pockets instead of fine suburban additions being created.

And almost everywhere, according to Leon Chatelain, Jr., president of the American Institute of Architects, speculative builders, with and without the aid of architects, are erecting houses which are poorly planned and ill suited to needs. Split level designs, proper on a hillside, are put on level ground, picture windows are installed that offer nothing better than a view of an identical house across the street, and the traditional center hall plan house is being compressed into a postage stamp size for which it was never intended. Thus are the slums of the future being created.

One conclusion to be drawn from these three examples is that growth does not always represent progress. Sometimes the type of growth is undesirable, sometimes otherwise good growth creates undesirable problems. In either case, of course, the solution is not to forego the growth, but to alter it into progress. For complacency with mere growth is a dangerous attitude.

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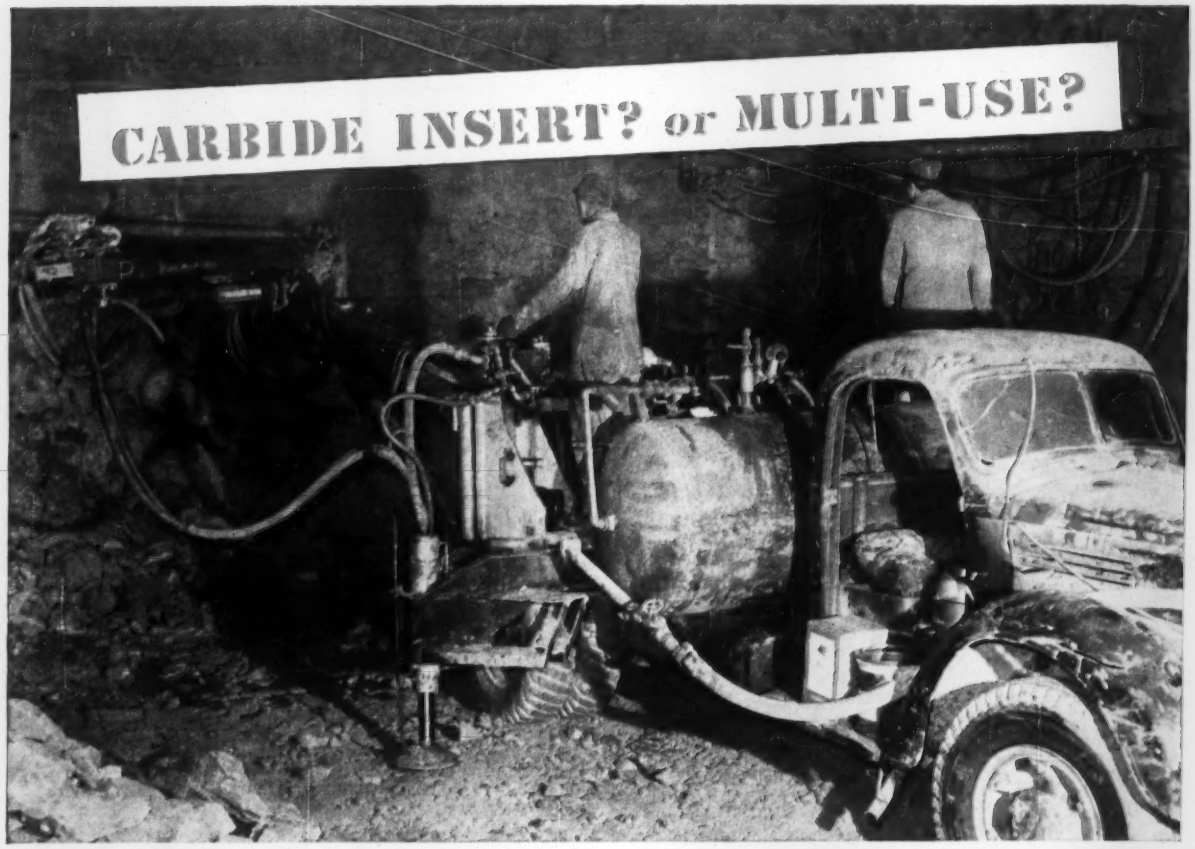

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